File No. 191033 Committee Item No. 1
Board Item No. _____

COMMITTEE/BOARD OF SUPERVISORS

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Committee: Budget & Finance Committee **Date** November 20, 2019

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Completed by: Linda Wong **Date** November 15, 2019
Completed by: Linda Wong **Date** _____

[Administrative, Public Works, Police Codes - Establishing Office of Emerging Technology - Requiring Permits for Using Emerging Technology Devices on Public Right-of-Ways]

Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works; amending the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; amending the Administrative Code to codify the Public Works Director's authority to take official actions, as defined herein, including adopting regulations for the pilot operation of emerging technology devices; amending the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for unlawful obstruction of the public right-of-way, including operation of emerging technology devices without a required permit; and affirming the Planning Department's determination under the California Environmental Quality Act.

NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.
Additions to Codes are in *single-underline italics Times New Roman font*.
Deletions to Codes are in ~~*strikethrough italics Times New Roman font*~~.
Board amendment additions are in double-underlined Arial font.
Board amendment deletions are in ~~strikethrough Arial font~~.
Asterisks (* * * *) indicate the omission of unchanged Code subsections or parts of tables.

Be it ordained by the People of the City and County of San Francisco:

Section 1. Environmental Findings.

The Planning Department has determined that the actions contemplated in this ordinance comply with the California Environmental Quality Act (California Public Resources Code Sections 21000 et seq.). Said determination is on file with the Clerk of the Board of Supervisors in File No. 170599 and is incorporated herein by reference. The Board affirms this determination.

Section 2. Background and General Findings.

(a) Technology is embedded in San Francisco's social and economic fabric. San Francisco has long been a center of innovation and technological progress, and City government has multifaceted and important roles to play in effectively managing the interaction between innovation, technology, the public, and public spaces and property. In recent years, numerous new and emerging technology devices were launched in San Francisco without sufficient time for public review or input, or consideration of new regulatory requirements to ensure public health, safety, and welfare. As a regulator and a steward of public right-of-ways and other public spaces and property, the City must develop appropriate policies and adopt and enforce safety requirements to mitigate risks and impacts new technologies pose for San Francisco residents and for City resources and infrastructure.

(b) In April 2018, the City adopted Resolution No. 102-18, which set forth principles for the regulation of emerging technology and urged the City Administrator to convene an emerging technology working group. Resolution No. 102-18 states: "[T]he Board of Supervisors is committed to investigating and adopting legislation including recommendations for a dedicated Office of Emerging Technology with appropriate staffing to ensure that City government is adequately nimble and responsive to address the impacts of emerging technologies in San Francisco." A copy of Resolution No. 102-18 is on file with the Clerk of the Board in File No. 171123.

(c) In adopting Resolution No. 102-18, the City resolved to use the principles described below ("Guiding Principles") to guide both the discussions and recommendations of an Emerging Technology Work Group and the formulation of future legislation:

(1) Emerging technology should provide a net common good, with consideration of whether such emerging technology benefits the few at the expense of the many;

(2) The safety, needs, and convenience of humans shall be prioritized over any emerging technology use;

(3) The needs of the most vulnerable members of our community, including seniors, children, and those with mobility or other limitations, should be adequately considered;

(4) The testing or piloting of any technology should provide the greatest emphasis on ensuring public safety, including a manual human override as appropriate;

(5) Any direct or indirect costs on the use of public infrastructure should be paid by the owner or operator of the technology and not by the public;

(6) Data sharing with relevant public agencies should be a condition of any authorization to use the public realm;

(7) In evaluating the public benefit of any emerging technology, the potential impact on congestion on roads, sidewalks, and public spaces should be carefully considered;

(8) Where appropriate, provide preference to those technologies that support rather than reduce the labor force in San Francisco;

(9) Where appropriate and feasible, technologies should include labeling, individual permit identifiers, business information, and emergency contact information for those responsible for the deployment of products;

(10) Where technology should protect private information of individuals, such information should be protected and appropriate informed consent given;

(11) Public-Private partnerships in Emerging Technology should be considered and evaluated to the highest standard, including any benefits, impacts, and costs to the City or the public infrastructure; and

(12) Any regulation should be nimble and responsive to changing conditions and demands.

(d) In June 2018, the City Administrator created the Emerging Technology Open Working Group ("Working Group") to inform future legislation on emerging technologies. The purpose of the Working Group was to assemble a broad and inclusive group of community members, technology companies, academics, advocates, merchants, and local government stakeholders to engage in dialogue regarding the impacts of technology and to support the City Administrator in the formulation of policy recommendations. Specifically, the Working Group's objectives were to engage the community and technology experts in the policy making process; gather feedback on recommendations for a regulatory and permitting process that addresses the use of emerging technologies on land, in the air and water, inside buildings and underground; and develop a nimble and responsive governance framework.

(e) In January 2019, the City Administrator's Office issued the Final Report of the Emerging Technology Open Working Group ("Emerging Technology Report"). The Emerging Technology Report discussed the following seven cross-cutting issues presented by the impact of emerging technologies: (1) community engagement and priorities; (2) equitable benefits; (3) accessibility and safety; (4) agile permitting and accountability; (5) data sharing and privacy; (6) forecasting; and (7) collaboration and partnerships among the City, the community, and emerging technology companies.

(f) The Emerging Technology Report included five recommendations to the Mayor and the Board of Supervisors: (1) to create a front door for emerging technology, (2) to improve communication with the community, (3) to safely test and evaluate new technologies, (4) to support responsive policy development, and (5) to implement smart forecasting through expert collaboration.

(g) By this ordinance, the City will begin implementing the Guiding Principles and a portion of the recommendations set forth in the Emerging Technology Report to better serve San Francisco residents, workers, businesses, and visitors, and to address their interests in or

concerns regarding Emerging Technology. All units or components of City government, including but not limited to boards and commissions, departments, offices, agencies, or officials (each a "City Department" and collectively "City Departments") shall, as applicable, work collaboratively in the implementation of this ordinance, identify and adopt regulations or protocols aimed at streamlining the review and regulation of Emerging Technologies, and refer proposals to use Emerging Technologies on City property and right-of-ways to the Office of Emerging Technology for review and referral to and consultation with other City Departments with technical expertise or regulatory jurisdiction over the proposed use of Emerging Technologies.

Section 3. The Administrative Code is hereby amended by adding Chapter 22G, to read as follows:

CHAPTER 22G. OFFICE OF EMERGING TECHNOLOGY

SEC. 22G.1. PURPOSE OF CHAPTER.

(a) The purpose of this Chapter 22G is to streamline and coordinate the City's review and permitting of Emerging Technologies. OET shall monitor Emerging Technologies that are currently used or may one day be used in San Francisco; collaborate with other City Departments on the formulation of best practices, procedures, and requirements for managing the use and testing of Emerging Technologies; facilitate the referral and review of permit applications by appropriate City Departments and the issuance of Testing permits and other permits by City Departments, as may be applicable, to help ensure Emerging Technologies can operate to serve the public good while minimizing harms to public health, safety, welfare, and convenience, and public spaces; and to facilitate the streamlined and consolidated issuance of permits and consideration of appeals, subject to the authority of Special Jurisdiction Agencies and other applicable limitations set forth in state law and/or the Charter.

(b) Notwithstanding subsection (a) or any of its provisions, this Chapter 22G shall not abridge, modify, or alter the authority granted by State law or the City Charter to the Special Jurisdiction Agencies, unless any such Special Jurisdiction Agency authorizes any such changes, and provided that any such Special Jurisdiction Agency may enter into an agreement with any City Department Partner to implement this Chapter in a manner consistent with State law, the Charter, the Municipal Code, and City ordinances.

SEC. 22G.2. DEFINITIONS.

For purposes of this Chapter 22G, the following definitions shall apply:

"Additional Agency Approvals" means any additional permits, licenses, or other approvals from federal, state, or local regulatory agencies or any other City Department Partner that may be required to perform the Pilot Project.

"Approve" or "Approval" means the decision of the OET Director to approve a Pilot Project Proposal subject to modifications or conditions including but not limited to the applicant's obtaining all Additional Agency Approvals.

"Charter" means the Charter of the City.

"City" means the City and County of San Francisco and all of its units or components of government.

"City Department" means any unit or component of City government, including but not limited to boards and commissions, departments, offices, agencies, or officials.

"City Department Partners" means all City Departments with jurisdiction over an Emerging Technology, the functions or activities performed by the Emerging Technology, or the physical area proposed to be used for or affected by the Emerging Technology.

"City-Owned Lot" means any real property lot owned by the City and administered by the Director of Real Estate under the provisions of Chapter 23 of this Code.

"Condition of Approval" or "Conditions of Approval" means one or more conditions of Approval of a Pilot Project imposed by OET or any conditions of approval of any applicable Additional Agency Approvals including payment of all applicable costs and fees to OET and the City Department Partners.

"Department" means the Department of Public Works.

"Emerging Technology" or "Emerging Technologies" means one or more physical objects, whether mobile or stationary, that constitute or incorporate new electronic or mobile technologies or applications of technology and which are proposed for use upon, above, or below City property and/or the public right-of-way. For purposes of this definition, characteristics of new electronic or mobile technologies or applications of technology include but are not limited to designation of the technology as a beta, test, or pre-sale product or system or application software; lacking or failing to meet written evaluation or analysis for safety purposes required to be met by any regulatory body of the United States, the State of California, or the City; and lacking or failing to meet applicable safety standards adopted or set by a government agency. Examples of Emerging Technologies may include but are not limited to powered devices, whether wheeled or non-wheeled, used for assistive, occupational, delivery, transportation, recreational, mobility, data gathering, testing, commercial, research, or other purposes.

"Emerging Technology Company" means any entrepreneur, firm, company, business, or other business entity, of whatever size or structure, whether subject to or exempt from taxation, that develops, utilizes, markets, licenses, or sells any Emerging Technology. Emerging Technology Companies shall be eligible to be a Pilot Project Sponsor under this Chapter 22G.

"Final Decision" means the final decision on the appeal of the OET Director's action to suspend, modify, or rescind the Approval or any City Department Partner's action to suspend, modify, rescind, revoke, or terminate any Additional Agency Approval.

"Notice to Proceed" means a written determination issued by OETOET and approved by the OET Director, indicating that the Pilot Project Sponsor has complied with all Conditions of Approval required to be met prior to the commencement of the Pilot Project and has provided OET with sufficient evidence of the issuance of all Additional Agency Approvals and the Pilot Project Sponsor's compliance with all Conditions of Approval set forth in the Additional Agency Approvals.

"Notice of Suspension" means a written determination issued by the OET and approved by the OET Director, indicating that the Pilot Project Sponsor has failed to comply with one or more Conditions of Approval and the Pilot Project Sponsor lacks authorization to conduct, perform, or engage in the Pilot Project while the Notice of Suspension is in effect.

"OET" means the Office of Emerging Technology

"OET Director" means the director of the Office of Emerging Technology.

"Pilot Project" means the operation or use of an Emerging Technology upon, above, or below City property and/or the public right-of-way in the City's jurisdiction, as authorized by OET, for a limited duration for purposes including but not limited to testing and evaluation in anticipation of potential commercial uses.

"Pilot Project Proposal" means a proposal seeking authorization to perform a Pilot Project.

"Pilot Project Sponsor" means the natural or legal person that has submitted a Pilot Project Proposal. A Pilot Project Sponsor must be an Emerging Technology Company.

"Proposed Activities" means activities proposed to be conducted, performed, or engaged in as part of a Pilot Project Proposal, including the duration of the proposed activities, the proposed locations of deployment of the Emerging Technology, and the proposed means and methods of conducting, performing, or engaging in the proposed Pilot Project.

"Public Works Director" means the Director of the Department or the Director's designee.

"Special Jurisdiction Agencies" means the Recreation and Park Commission, the Airport Commission, and the City Department Partners with exclusive jurisdiction as set forth in the Charter

including the Municipal Transportation Agency ("SFMTA"), the Port of San Francisco ("Port"), and the Public Utilities Commission ("SFPUC"). Special Jurisdiction Agencies encompass both the City Department's governing body, board, or commission, and the City Department responsible for administering the City Department's affairs.

"Special Jurisdiction Agency Property" means real property within the jurisdiction of a Special Jurisdiction Agency.

"Stakeholders" means San Francisco residents, businesses, community organizations, and others who have provided written notice to OET that they wish to receive any public notice of public meetings and hearings regarding Emerging Technologies.

"State" means the State of California.

"Term" means an initial period not exceeding 12 months.

SEC. 22G.3. OFFICE OF EMERGING TECHNOLOGY – MISSION AND POWERS.

(a) Establishment. The Office of Emerging Technology is hereby created within the Department and shall be headed by the OET Director, who shall be appointed by the Public Works Director and who shall meet the qualifications for staffing of OET in subsection (b).

(b) Staffing. OET shall be staffed with experienced and qualified technology professionals or experts or those who have experience with or knowledge of San Francisco's unique community values and regulatory environment.

(c) Mission and Purposes. OET shall have the mission and purposes set forth in this subsection (c).

(1) Serve as an initial point of contact, akin to a "front door," and a continuing point of contact and central repository of information and expertise, for members of the public and prospective operators of Emerging Technology to engage with the City regarding Emerging Technology issues, to enable members of the public and Emerging Technology Companies to seek and provide information, express viewpoints, and receive feedback regarding Emerging Technologies.

(2) Develop evaluation criteria and collaborate with other City Departments regarding the testing, evaluation, and regulation of Emerging Technology within the City.

(3) Facilitate communication among Emerging Technology Companies, San Francisco residents, and local businesses.

(4) Research the effects of Emerging Technology on the City's resources, residents, and businesses, and support responsive policy development in areas such as equity, accessibility, privacy, and the responsible and sustainable use of data.

(5) Foster smart forecasting through collaboration with subject matter experts outside of City government including but not limited to academic and policy makers and administrators from government agencies separate from the City, consistent with the civil service provisions of the Charter.

(d) Collaboration and Outreach. OET shall work with City Departments, including but not limited to the Real Estate Department, as defined in the Administrative Code, and the Special Jurisdiction Agencies; other governmental entities; Emerging Technology Companies; non-government organizations; members of academia; community members; and other interested parties and Stakeholders to formulate best practices for addressing new and evolving regulatory issues and questions regarding Emerging Technologies.

(e) Powers and Duties. OET shall have the powers, responsibilities, and duties set forth in this subsection (e).

(1) Emerging Technology Front Door. OET shall provide informational resources to Emerging Technology Companies to help enable such businesses to determine which permitting, regulatory, and other requirements may be applicable to the operation of the Emerging Technology in San Francisco. OET shall be the City's point of contact for providing information to and facilitating dialogue among Emerging Technology Companies and San Francisco residents, workers, local businesses, visitors, and other members of the public regarding Emerging Technologies. In addition,

OET shall solicit and receive feedback regarding comments, ideas, and concerns about Emerging Technology.

(2) Testing, Evaluation, and Data Collection and Sharing. OET shall strive to provide Emerging Technology Companies with consistent and agile processes for safely developing, operating, and testing products and services in public spaces. OET shall research, design, and implement methods for testing, evaluating, and measuring the effects of Emerging Technology and shall coordinate City Department efforts to develop data collection and evaluation criteria regarding the effects of Emerging Technology on San Francisco residents and City resources and infrastructure. OET shall collaborate with other City Departments regarding the testing, evaluation, permitting, and regulation of Emerging Technology within the City, and data collection and sharing methods and protocols. Subject to the authority of Special Jurisdiction Agencies and other applicable limitations set forth in state law, the Charter, and/or any agreement between OET and the City Department Partners, upon request from the OET Director, each City Department Partner shall share data regarding Emerging Technologies, Emerging Technology Companies, Pilot Projects, or Proposed Activities, in the possession of such City Department Partner, with OET for purposes consistent with this Chapter 22G.

(3) Evaluation of Proposed Pilot Projects. OET shall receive Pilot Project Proposals in a format approved by OET and any applicable City Department Partner, and shall be authorized to deny or Approve a Pilot Project Proposal, as described more fully in Section 22G.4, subject to the Pilot Project Sponsor's compliance with all conditions of approval including but not limited to any requirements imposed by any applicable City Department Partner and obtaining all Additional Agency Approvals. OET shall not exercise decision-making authority over activities within the jurisdiction of the Special Jurisdiction Agencies, unless otherwise authorized by such agency.

(4) Thought Leadership and Policy Development. OET shall: (A) investigate, research, and consult subject matter experts regarding the development, usage, and effects of Emerging

Technology on the City's resources and residents, particularly the most vulnerable members of the San Francisco community including seniors, children, economically disadvantaged individuals, and persons with mobility or other medical or health limitations; (B) support responsive policy development in areas such as equity, accessibility, privacy, and responsible and sustainable use of data; (C) focus on and monitor existing and evolving accessibility standards; and (D) make and provide support for recommendations to the Board of Supervisors, the Mayor, and other City Departments regarding amendments and updates to the Municipal Code and City regulations and processes to address the challenges posed and opportunities presented by Emerging Technologies.

(5) Communication. OET shall research, develop, and apply best practices to facilitate communication and share information regarding Emerging Technologies among City departments, Emerging Technology Companies, and Stakeholders. OET shall maintain a list of Stakeholders and notify such Stakeholders of any public hearings and meetings called by OET, and also may notify Stakeholders of other meetings or developments regarding Emerging Technologies. OET may in its discretion treat as Stakeholders persons or entities who do not meet the definition of Stakeholder in Section 22G.2.

(6) Forecasting. OET shall endeavor to create partnerships with businesses, organizations, educational institutions, and government agencies separate from the City to learn from deployments of Emerging Technologies outside of San Francisco and related Emerging Technology trends. OET shall endeavor to help build relationships with and among Stakeholders by hosting gatherings, forums, and presentations about Emerging Technology priority issues facing San Francisco.

SEC. 22G.4. REVIEWING AND APPROVING PILOT PROJECT PROPOSALS.

(a) Pilot Project Approval Required. To operate an Emerging Technology upon, over, or under City property or the public right-of-way, the Emerging Technology Company must obtain

Approval of a Pilot Project Proposal from the OET Director, comply with all conditions of the Approval, and receive a Notice to Proceed.

(b) Exemptions. Notwithstanding any provision of this Section 22G.4, an Emerging Technology Company shall be exempt from the requirement to obtain Approval from the OET Director if the Emerging Technology Company demonstrates to the OET Director's satisfaction that the Proposed Activities are, in their entirety, independently authorized by federal law or State law, or if the Proposed Activities are entirely within the jurisdiction of one Special Jurisdiction Agency, or if the Proposed Activities are entirely within the jurisdiction of more than one Special Jurisdiction Agency and are governed by an agreement approved by each applicable Special Jurisdiction Agency.

(c) Pilot Project Proposals. Emerging Technology Companies are eligible to submit Pilot Project Proposals in accordance with this Chapter 22G.

(d) Limited Term Approval. OET shall have the discretion to Approve a Pilot Project Proposal that requires City authorization or permission to use or occupy public property, including but not limited to a City-Owned Lot, or a public right-of-way for a Term. The use or occupation of public property includes use and occupation upon, above, or under public property. OET shall be authorized to Approve one extension of the Term for up to an additional 12 months, provided the Pilot Project Sponsor has complied with all applicable conditions of the Approval of the Pilot Project and such an extension is contemplated and not prohibited by any Additional Agency Approval.

(e) Expiration of Pilot Project Authorization. The authorization for the Pilot Project shall automatically cease, and no longer be operative, upon any of the following circumstances:

(1) the expiration of the Term of the Pilot Project, if OET does not extend the Term as permitted in subsection (d); or

(2) if OET extends the Term of a Pilot Project as permitted in subsection (d), upon the expiration of the Term as extended; or

(3) before the expiration of the Term as initially set or extended, if required by any applicable Additional Agency Approval.

(f) Pilot Project Applicant Must Obtain All Additional Agency Approvals. The OET Director's Approval of a Pilot Project Proposal shall not preclude or supersede any requirement to obtain any Additional Agency Approval required to perform the Pilot Project. This Chapter 22G does not implicitly repeal any requirements for Additional Agency Approval otherwise required by law.

(g) Pilot Projects on City-Owned Lots. The Director of Real Estate may approve the use of City Lots for a Pilot Project under the provisions of Chapter 23 of this Code. Alternatively, the Director of Real Estate may approve the use of City Lots for a Pilot Project under the provisions of this Chapter 22G, in which case the Director of Real Estate is authorized to establish, in consultation with the OET Director, rules and procedures for doing so

(h) Fees. The fee for the initial application for review of a Pilot Project proposal and for any renewal application ("Pilot Project Review Fee Deposit") shall be $2,006, payable to the Department. The Pilot Project Review Fee Deposit shall be due at the time of application and shall be paid in addition to any other applicable fees authorized pursuant to the Municipal Code, including without limitation Public Works Code Section 2.1.3, which shall be payable separate from the Pilot Project Review Fee Deposit as such additional costs are incurred by OET and City Departments in the administration of the Pilot Project. Beginning with fiscal year 2021-2022, the fee set forth in this subsection (h) may be adjusted each year, without further legislative action, in the following manner. Within the later of six months from the effective date of this Chapter 22G or the end of the first fiscal year containing the effective date, OET shall report to the Controller the revenues generated by the fees for the then-current fiscal year and the costs during that fiscal year of establishing and maintaining OET and implementing the requirements of this Chapter, as of the date of the report, which date can be earlier than the date of the submittal of the report to the Controller, as well as any other information that the Controller requests based on the Controller's determination that the information would assist

in the performance of the Controller's duties set forth in this Chapter. No later than August 1, 2020, the Controller shall determine whether the existing fees have produced or are projected to produce revenues sufficient to support the costs of establishing and maintaining OET and implementing the requirements of this Chapter and any other services set forth in this Chapter and that the fees will not produce revenue that is significantly more than the costs of providing such services. The Controller shall adjust the fees upward or downward for the fiscal year subsequent to the then-current fiscal year, as may be necessary to ensure that the program recovers the costs of operation without producing revenue that is significantly more than such costs. The adjusted fee shall first become operative on July 1, 2021.

(i) City Department Coordination. OET shall coordinate among City Department Partners to identify applicable Additional Agency Approvals and to develop criteria, rules, procedures, and forms for designing, permitting, and implementing Pilot Projects to test the effects of Emerging Technologies on City resources and San Francisco residents, businesses, and visitors.

(j) Application Submittal. Emerging Technology Companies or other users of Emerging Technologies shall be eligible to submit an application to operate a Pilot Project to OET. The application shall be submitted in a form and manner approved by OET, and shall contain all information and data required by OET, and shall describe the Proposed Activities.

(k) Application Review. OET shall identify all applicable City Department Partners, and shall refer the application for the review of those City Department Partners.

(1) If the Proposed Activities fall entirely within the jurisdiction of one Special Jurisdiction Agency, OET shall refer the application to that Special Jurisdiction Agency for its review and decision-making and such application shall not be subject to further application review under this Chapter 22G unless such Special Jurisdiction Agency elects to follow the procedures and requirements set forth in this Chapter or agrees to the Office's review of the application under this Chapter. Any

Proposed Activities determined to be within the exclusive jurisdiction of the SFMTA shall be subject to and governed by the requirements set forth in Division II of the Transportation Code.

(2) Where the Proposed Activities do not fall entirely within the jurisdiction of one City Department Partner, OET shall consult with all applicable City Department Partners and shall determine whether the Proposed Activities warrant approval of a Pilot Project. The OET Director's evaluation of the Proposed Activities shall consider factors including but not limited to:

(A) the Guiding Principles expressed in Board of Supervisors Resolution No. 102-18 and reiterated in Section 2 of the ordinance in Board File No. 171123, establishing this Chapter 22G;

(B) the effects of the Emerging Technology on public health, safety, welfare, and convenience;

(C) whether the Emerging Technology and/or the Proposed Activities are likely to have a measurable economic and/or social impact in the three- to ten-year period following the use of the Emerging Technologies;

(D) effects of the Emerging Technology on the labor market; and

(E) whether the Emerging Technology is regulated to the extent required to protect public health, safety, welfare, and convenience, and public spaces.

(3) OET shall not Approve the Pilot Project with respect to the portion of the Proposed Activities on Special Jurisdiction Agency Property if the applicable Special Jurisdiction Agency has notified OET in writing of its denial of permission to proceed with the Proposed Activities on the applicable Special Jurisdiction Agency Property.

(l) Approval Decision.

(1) Application May Be Approved, Approved With Modifications, Denied, or Partially Denied. After the application has been reviewed, the OET Director shall Approve the application, Approve the application with modifications, deny the application, or deny the application in part if the

Special Jurisdiction Agency has provided written denial of permission to proceed with the Proposed Activities on Special Jurisdiction Agency Property.

(2) Additional Agency Approvals May Be Required. If an Additional Agency Approval is required before the Pilot Project may proceed, the OET Director's Approval of the Pilot Project shall require the applicant to obtain all required Additional Agency Approvals prior to the issuance of a Notice to Proceed. OET shall use reasonable efforts to facilitate and coordinate the review of Pilot Project applications by and among City Department Partners.

(3) Pilot Project Parameters Based on Coordination With City Department Partners. OET shall coordinate with the City Department Partners to develop the conditions and parameters of the Pilot Project, including the dates and times of the Pilot Project, the locations at which the use of the Emerging Technology will be authorized during the Pilot Project, and the criteria for evaluating the effects of the Emerging Technology on City infrastructure and resources and San Francisco residents.

(4) Evaluation Criteria. The OET Director may determine criteria for evaluation of Pilot Project applications. In evaluating an application, the OET Director may consider, among other factors, whether the Pilot Project is intended to yield information that could be used to safeguard and further public health, safety, and welfare; develop technical knowledge and expertise regarding the Emerging Technology; or develop best practices and regulatory requirements; or whether the Pilot Project poses unknown or unreasonable risks to public health, safety, and welfare. In addition, the OET Director may consider the extent to which an applicant has the capacity to meet the permit terms based on past experience operating permit programs, including, but not limited to, the applicant's compliance with applicable laws.

(m) Notice to Proceed. After the Pilot Project Sponsor has obtained the OET Director's Approval and all required Additional Agency Approvals, the Pilot Project Sponsor shall submit to OET a written request for a Notice to Proceed, and shall include as part of that request evidence of the issuance of all Additional Agency Approvals and satisfaction of all applicable Conditions of Approval.

Upon confirming that the applicant has satisfied all Conditions of Approval, OET shall issue a Notice to Proceed that authorizes the applicant to commence performance of the Approved Pilot Project.

(n) Notice of Suspension Due To Failure To Comply With Conditions of Approval. OET and the City Department Partners, as applicable, shall supervise the performance of the Pilot Project and shall require the Permittee to comply with all Conditions of Approval. Failure to comply with the Conditions of Approval shall be grounds for complete or partial suspension of the Pilot Project and OET's issuance of a Notice of Suspension as described below. If the Pilot Project results in conditions that negatively impact public peace, safety, health, or welfare, the OET Director may suspend, modify, or rescind the Approval decision as may be appropriate under the circumstances. The suspension, modification, rescission, revocation, or termination of any Additional Agency Approval shall result in the automatic suspension of the Pilot Project and may result in enforcement actions brought pursuant to this Chapter 22G and other provisions of the Municipal Code. Upon the suspension of a Pilot Project and upon the OET Director's determination that the Pilot Project, as modified to exclude the activities that cease to be authorized by an Additional Agency Approval, would not pose dangers to public health, safety, welfare, and convenience that are greater than those posed by the Pilot Project, the OET Director shall have the authority to determine that the Pilot Project shall be allowed to proceed as modified to exclude the activities that cease to be authorized by an Additional Agency Approval. The OET Director's determination shall not be appealable.

(1) A Notice of Suspension shall inform the Pilot Project Sponsor that the Pilot Project lacks authorization to proceed or operate, and that the Notice to Proceed shall be suspended and shall remain suspended, until there is a Final Decision or the expiration of the time period to appeal the decision of the City Department Partner to suspend, modify, rescind, revoke, or terminate the Additional Agency Approval. A Pilot Project Sponsor's failure to comply with the Notice of Suspension shall be a violation of the Conditions of Approval and shall be subject to enforcement pursuant to subsection (o).

(2) If the OET Director receives a written notification from a City Department Partner requesting the suspension of the Notice to Proceed as to all or a portion of the Pilot Project, as specified in the City Department Partner's written notification, due to the City Department Partner's suspension, modification, rescission, revocation, or termination of such City Department Partner's Additional Agency Approval, the OET Director shall issue a Notice of Suspension.

(3) If, independent of receiving any written notice from a City Department Partner requesting the suspension of the Notice to Proceed due to the City Department Partner's suspension, modification, rescission, revocation, or termination of such City Department Partner's Additional Agency Approval, the OET Director determines that the Pilot Project Sponsor has failed to comply with one or more Condition of Approval, the OET Director shall inform all City Department Partners that issued Additional Agency Approvals and shall issue a Notice of Suspension.

(o) Administrative Penalties or Fines. Failure to comply with any requirement in this Chapter 22G shall be deemed a public nuisance subject to enforcement and administrative citations for such violations. The administrative penalty or fine shall not exceed $1,000 per day for each violation. Administrative penalties shall be assessed, enforced, and collected in accordance with Section 39-1 of the Police Code and administrative fines shall be assessed, enforced, and collected in accordance with Administrative Code Chapter 100, which is incorporated by reference herein.

(p) Appeals.

(1) The OET Director's issuance of a Notice of Suspension pursuant to subsection (n)(3) may be appealed to the Public Works Director upon the Pilot Project Sponsor's filing of a written appeal to the Public Works Director within 15 days of the date of the Notice of Suspension.

(2) The OET Director's issuance of a Notice of Suspension pursuant to subsection (n)(2) shall not be appealable apart from the process, if any, for appealing the action or decision of the City Department Partner responsible for suspending the applicable Additional Agency Approval.

(q) Draft and Final Project Reports. Within 60 days of the expiration of the Term of the Pilot Project, the Pilot Project Sponsor shall submit a draft Pilot Project report including all data concerning the safety and performance of the Pilot Project, and other data as requested by the OET Director, to the OET Director. Within 60 days of receiving the draft Pilot Project report, the OET Director shall issue a final Pilot Project report ("Final Pilot Project Report") prepared in consultation with the applicable City Department Partners. The Final Pilot Project Report shall summarize the scope of the Pilot Project and include the OET Director's independent evaluation of the performance of the Pilot Project and recommendations regarding whether new legislation, regulations, or procedures should be adopted to regulate, deregulate, allow, prohibit, or otherwise address such Emerging Technologies on public property or the public right-of-way. Each Final Pilot Project Report shall be available to the public on the Department's or OET's website.

(r) Annual Report to the Board of Supervisors. No later than one year from the effective date of this Chapter 22G, and annually thereafter, OET shall submit to the Board of Supervisors and the Mayor an Emerging Technology report ("Annual Report") that describes the work performed by OET during the prior calendar year including without limitation the Pilot Project Proposals received, the Pilot Projects approved and/or completed during the term covered in the Annual Report, the OET Director's analysis and recommendations corresponding to each Pilot Project, OET's analysis of Emerging Technology data, including the effects of Emerging Technologies on public spaces and the labor market, and the OET Director's conclusions and recommendations regarding such data. As may be required to safeguard public health, safety, welfare, and convenience in light of the effects of particular categories of Emerging Technologies or businesses seeking to utilize, market, test, sell, or launch Emerging Technologies, the Annual Report shall include recommendations that the City, including Special Jurisdiction Agencies, take legislative and/or administrative actions to modify, streamline, consolidate, amend, or terminate, as applicable, existing permit programs and requirements; to create new permit programs; and to streamline or consolidate regulatory review and

approval processes and requirements among City Department Partners. The Annual Report shall include recommendations that the Board adopt or refrain from adoption of new legislation to regulate, deregulate, allow, or prohibit such Emerging Technologies upon, above, or below public property or the public right-of-way.

Section 4. The Public Works Code is hereby amended by adding Chapter 723.5, to read as follows:

SECTION 723.5 TESTING EMERGING TECHNOLOGY DEVICES ON PUBLIC RIGHT-OF-WAYS – PERMIT REQUIRED.

(a) Purpose. The purpose of this Section 723.5 is to establish a Pilot Permit program to regulate and temporarily authorize the physical operation, testing, and/or placement of certain Emerging Technologies Devices upon, above, or below City sidewalks, public right-of-ways, and property within the jurisdiction of Public Works. This Section 723.5 shall not govern the operation of Emerging Technology Devices on the portions of City streets and highways or public property subject to the sole jurisdiction of one or more Special Jurisdiction Agencies, unless such agencies authorize the application of this Section to said portions of streets, highways, or public property.

(b) Definitions.

"City Department Partners" has the same meaning as in Administrative Code Section 22G.2.

"Director" means the Public Works Director or the Public Works Director's designee.

"Emerging Technology" is equivalent to the definition set forth in the OET Ordinance.

"Emerging Technology Device" means the physical device or enclosure that constitutes, implements, or utilizes an Emerging Technology, or the physical device or enclosure that is required for the Emerging Technology to operate or function.

"Notice of Application" means a written notice on a form provided or approved by Public Works that indicates an application for a Pilot Permit is being considered for approval by Public Works.

"Notice to Proceed" has the same meaning as in Administrative Code Section 22G.2.

"OET" has the same meaning as in Administrative Code Section 22G.2.

"OET Director" has the same meaning as in Administrative Code Section 22G.2.

"OET Ordinance" means Administrative Code Chapter 22G (Office of Emerging Technology), as may be amended from time to time.

"Pilot Permit" means a permit issued by the Director to perform a PW Pilot Project under this Section 723.5. A Pilot Permit is separate and distinct from a Notice to Proceed.

"Pilot Project"

"Pilot Term" means the term of days for which a PW Pilot Project is authorized by the Director under this Section 723.5.

"Public Works" means the Department of Public Works.

"PW Pilot Project" means the portion of the Pilot Project, as defined in the OET Ordinance, that takes place on public right-of-ways or real property within the jurisdiction of Public Works.

"Regulations" means orders, requirements, processes, or procedures that the Director may adopt as the Director deems necessary to maintain and further the public peace, safety, health, convenience, and welfare.

"Special Jurisdiction Agencies" has the same meaning as in Administrative Code Section 22G.2.

"Testing" means the operation and evaluation of an Emerging Technology or Emerging Technology Device for research and development for anticipated commercial uses and for the City's evaluation of whether the operation of the Emerging Technology Device would warrant the creation of

a permit program that would allow the Emerging Technology Device to operate beyond the Pilot Term in light of the effects of the Emerging Technology on public health, safety, welfare, and convenience.

(c) ***Permit Required.*** *It shall be unlawful for any person, including but not limited to natural persons and businesses, to operate an Emerging Technology Device upon, above, or below any public right-of-way (as defined in Article 2.4 of the Public Works Code) or public property within Public Works' jurisdiction without a Pilot Permit, unless otherwise authorized by federal or state law. Operation of an Emerging Technology Device upon, above, or below any public right-of-way or public property without all required permits shall be deemed a public nuisance. To be eligible to apply for a Pilot Permit under this Section 723.5, the applicant must first obtain Approval, as defined in Administrative Code Section 22G.2, to perform a Pilot Project and pay all applicable fees.*

(d) ***Public Works Director's Administration of Permit.*** *The Director shall administer all Pilot Permits in consultation with all applicable City Department Partners and pursuant to the requirements, rules, and regulations set forth in this Section 723.5 or other Regulations.*

(e) ***Restrictions on Duration of Pilot Permits.*** *The Director shall be authorized to determine the term of any Pilot Permit issued under this Section 723.5 provided that the duration shall not exceed 12 months and shall be subject to the Director's authority to grant one extension of an additional 12 months. When a permittee requests an extension, the permittee shall provide Public Works with a report that provides all data collected during prior Testing and describes any public safety-related incidents that have occurred including all emergency calls for service.*

(f) ***Application Process.*** *Public Works shall receive and process each complete Pilot Permit application, and the content of applications shall comply with the Director's Regulations. All applications shall be on forms prescribed therefor and shall contain or be accompanied by all information required to assure the presentation of pertinent facts for proper consideration of the application. At a minimum, the applicant shall provide the following information as part of the application submittal:*

(1) Business entity name, name of natural person submitting application, office address, telephone number, and email address;

(2) Copy of business license;

(3) Tax identification number;

(4) Description, physical dimensions, and technical specifications of the Emerging Technology Device;

(5) Description and purpose of Testing;

(6) Proposed dates and times of Testing;

(7) Proposed paths of travel and identification of any portion of the paths of travel that are within or adjacent to the "High Injury Network" as designated by the City's Vision Zero SF road safety initiative;

(8) Operations manuals and instructions for operation of the Emerging Technology Device, including manner of causing it to come to a full and complete stop;

(9) Privacy policy that addresses the manner in which applicant will use, store, and safeguard photographic, video, and other data obtained through the Testing; and

(10) Proposed public notice plan.

Public Works shall refer an application to any other appropriate City department for its review and consultation. After reviewing the Pilot Permit application and determining that the application is complete, Public Works shall inform the applicant that the applicant is authorized to proceed to post Notices of Application.

(g) ***Public Notice and Opportunity to Comment.*** *Upon receiving authorization to proceed to post Notices of Application, the applicant shall post Notices of Application for a period of 20 calendar days at the Testing site(s) according to a public notice plan approved by Public Works, and the applicant shall also provide any Notice of Application to Stakeholders as defined in Administrative Code Section 22G.2 and other interested persons, as may be prescribed by the Director's Regulations.*

The applicant shall submit to Public Works photographic evidence that the Notices of Application were posted in accordance with this subsection (g). The applicant shall remove all Notices of Application the day after the expiration of the 20-day notice period. Public Works shall accept public comments on the Notice of Application for 20 calendar days from the first day the Notice of Application was posted. Public Works shall also list pending applications and all approved Pilot Permits on the Public Works website.

(h) ***Public Hearings.***

(1) ***Public Works Hearing.*** *Upon receiving a request for a hearing from a member of the public during the notification period, the Director shall review the merit of the request and the Director shall schedule and hold a public hearing, at the Director's sole discretion, regarding each application for a Pilot Permit. Unless otherwise stated in this Section 723.5, the Notice of Public Hearing posting shall comply with Article 5.6 of the Public Works Code. The Public Works Director shall also notify the Board of Supervisors of any public hearing held under this subsection (h)(1), and of the Director's written determination after such hearing.*

(2) ***Appeal to Board of Appeals.*** *The Director's approval or denial of a Pilot Permit application, or the Director's modification, suspension, or revocation of a Pilot Permit, may be appealed by filing a notice of appeal with the Board of Appeals.*

(i) ***Conditions of Approval and Data Sharing.***

(1) ***Conditions of Approval.*** *The Director, in consultation with other City departments, as applicable, shall impose any conditions of approval that the Director deems necessary or appropriate to protect the public peace, safety, health, and welfare of pedestrians and other users of the sidewalks, public right-of-ways, and public property ("Conditions of Approval"). The Director shall have the authority to add Conditions of Approval to modify, or suspend the Pilot Permit to address public peace, safety, health, and welfare issues arising from the Testing, including but not limited to conditions intended to promote safe operations within the High Injury Network. Upon the Director's*

determination that the permittee has failed to comply with the Conditions of Approval, the Director shall provide the permittee with written notification of the time and date of a public hearing to consider the grounds for revoking, modifying, or suspending the Pilot Permit. Following the public hearing, the Director shall issue an order revoking or modifying the Pilot Permit for good cause. If the failure to comply with the Conditions of Approval poses an imminent threat to public safety, health, or welfare, the Director shall immediately suspend the permit pending a final decision to revoke or modify the Pilot Permit. The Director's modification, revocation, or suspension of the Pilot Permit may be appealed to the Board of Appeals under subsection (h)(2).

*(2) **Data Sharing.** Each Pilot Permit permittee shall disclose the following information to Public Works and OET on a monthly basis in an aggregated form that preserves the privacy and the confidentiality of the identity of end users that are not employees, contractors, or subcontractors of the Pilot Permit permittee:*

(A) all data collected during the Testing of an Emerging Technology Device, including any Global Positioning System ("GPS") or photographic data;

(B) information regarding the San Francisco businesses that are incorporating the Testing of Emerging Technology Devices into their operations; and

(C) incidents arising from the Testing of each Emerging Technology Device, including but not limited to, violations of the operational requirements set forth in subsection (j), incidents impacting public safety, public complaints or emergency calls regarding such Testing, any malfunctions or public tampering with a permitted device, or any collisions with street furniture, vehicles, or persons in the public right-of-way.

*(j) **Operational Requirements.** The Testing of Emerging Technology Devices shall comply with the following requirements, if applicable, and any additional requirements adopted by the Public Works Director as needed to protect the public health, safety, and welfare. To evaluate whether a*

permittee has complied with these requirements, Public Works shall seek the review and consultation of any other appropriate City department.

*(1) **Speed limit.** Emerging Technology Devices shall not travel more than three miles per hour while on an open public right-of-way.*

*(2) **Minimum Accessibility Requirements on Public Right-of-Ways.** Emerging Technology Devices shall avoid obstructing the path of travel and shall avoid interfering with the following minimum right-of-way clearance requirements: (A) a six-foot clear path of travel in commercial corridors and four-foot clear path of travel in residential corridors; and (B) a minimum two-foot clearance is required along the curbside when operating adjacent to existing on-street parking. In addition, Emerging Technology Devices shall not block or obstruct an accessible route including, but not limited to, the pedestrian throughway zone (as defined in the San Francisco Better Streets Plan), and building facility entrances, public and private transit stops, passenger loading zones, and accessible on-street parking spaces. Emerging Technology Devices shall move out of an accessible route when a pedestrian is present and shall allow the unencumbered passage of pedestrians within the public right-of-way. Emerging Technology Devices shall not in any way impede or interfere with use of driveways or curb ramps, or access to or egress from buildings, driveways, fire escapes, Fire Department Connections ("FDC"), fire hydrants, street furniture, maintenance holes, public utility valves, or other at-grade access points in the street or sidewalk.*

*(3) **Permissible Testing Areas.** Permittees shall only be allowed to Test Emerging Technology Devices only on sidewalks or public right-of-ways not used by vehicles that can simultaneously accommodate the Testing of Emerging Technology Devices and paths of travel for persons with disabilities or have an effective sidewalk width of six feet and meet the minimum access requirements on the public-right-of way.*

*(4) **Traffic Signals.** Emerging Technology Devices shall obey all signs and signals governing vehicular and pedestrian traffic.*

*(5) **Hazardous Materials.** Emerging Technology Devices may not transport or carry waste or hazardous materials (including flammables or ammunition).*

*(6) **Unique Identifier.** Each permittee shall place a unique identifier on each Emerging Technology Device that also includes the permittee's contact information.*

*(7) **Insurance Requirements.** Each permittee shall obtain and have readily accessible proof of sufficient general liability, automotive liability, and workers' compensation insurance.*

*(8) **Indemnification of City.** Each permittee shall agree to indemnify, defend, protect, and hold harmless the City from and against any and all claims of any kind allegedly arising directly or indirectly out of permittee's Testing of Emerging Technology Devices on City sidewalks and public right-of-ways.*

*(9) **Storage or Parking.** When any Emerging Technology Devices is not in use for Testing, each permittee shall store or park such Emerging Technology Devices on private property unless otherwise authorized by the Director for good cause.*

*(10) **Site Visits.** Each permittee shall allow Public Works and any other appropriate City department to attend and observe one or more Testing sessions during the Pilot Term.*

*(k) **Public Works' Report Regarding Pilot Permits.** Prior to the expiration of the Pilot Term, Public Works shall provide a "Pilot Permit Performance Report" to the OET Director evaluating the performance of the PW Pilot Project, summarizing the data provided by permittees, and offering findings and recommendations regarding whether, based on the PW Pilot Project, the Emerging Technology Device may be operated safely and feasibly on City sidewalks or public right-of-ways beyond the Pilot Term.*

*(l) **Fines and Penalties.***

*(1) **Criminal Penalty.** Any permittee that violates any of the provisions of this Section 723.5 shall be guilty of an infraction. Every violation determined to be an infraction is punishable by (A) a fine not exceeding $100 for the first violation within one year; (B) a fine not exceeding $200 for a*

second violation within one year from the date of the first violation; (C) a fine not exceeding $500 for the third and each additional violation within one year from the date of the first violation. No criminal penalty pursuant to this Section 723.5 may be imposed on the employee or staff of any company, corporation, or other business entity that is operating an Emerging Technology Device in violation of this Section 723.5. A permittee that has been fined for a second or subsequent infraction herein may be authorized to submit a written request for a hardship waiver seeking to reduce the amount of the second or subsequent fine on the grounds that the permittee made a bona fide effort to comply after the first violation and that payment of the full amount of the fine would impose an undue financial burden on the permittee.

(2) ***Civil Penalty.***

(A) The Public Works Director may request the City Attorney to maintain an action for injunction to restrain or summary abatement to cause the correction or abatement of a violation of this Section 723.5 and for assessment and recovery of a civil penalty and reasonable attorney's fees for such violation.

(B) Any person who violates this Section 723.5 may be liable for a civil penalty, not to exceed $500 for each day such violation is committed or permitted to continue, which penalty shall be assessed and recovered in a civil action brought in the name of the people of the City by the City Attorney in any court of competent jurisdiction. In assessing the amount of the civil penalty, the court may consider any one or more of the relevant circumstances presented by any of the parties to the case, including, but not limited to, the following: the nature and seriousness of the misconduct, the number of violations, the persistence of the misconduct, the length of time over which the misconduct occurred, the willfulness of the defendant's misconduct, and the defendant's assets, liabilities, and net worth. The City Attorney may seek recovery of attorney's fees and costs incurred in bringing a civil action pursuant to this subsection (l)(2).

*(3) **Administrative Fine.** In addition to the criminal and civil penalties authorized by subsections (l)(1) and (l)(2), Public Works employees designated in Section 38 of the Police Code may issue administrative citations for such violations. The administrative penalty or fine shall not exceed $1,000 per day for each violation. Administrative penalties shall be assessed, enforced, and collected in accordance with Section 39-1 of the Police Code and administrative fines shall be assessed, enforced, and collected in accordance with Administrative Code Chapter 100, which is incorporated by reference herein.*

Section 5. The Administrative Code is hereby amended by revising Section 2A.190 to read as follows:

SEC. 2A.190. DEPARTMENT OF PUBLIC WORKS.

(a) The Department of Public Works shall administer all capital improvement and construction projects, except projects solely under the Airport, Port, Public Utilities, *or* Recreation and Park ~~*and Public Transportation*~~ Commissions, *or the Municipal Transportation Agency's Board of Directors*.

(b) All examinations, plans, estimates, and construction administration services required by the City and County in connection with any public improvements, exclusive of those made by the Airport, Port, Public Utilities, *or* Recreation and Park ~~*and Public Transportation*~~ Commissions, *or the Municipal Transportation Agency's Board of Directors*, shall be made by the Director of Public Works, and the Director shall, when requested to do so, furnish information and data for the use of the Board of Supervisors.

(c) The Director of Public Works shall designate a deputy or other employee as City Engineer. The City Engineer shall possess the same power in the City and County as is or may from time to time be given by law to city engineers, and the official acts of the City

Engineer shall have the same validity and be of the same force and effect as are or may be given by law to those of city engineers.

(d) The Director of Public Works shall designate a deputy or other employee as County Surveyor. The County Surveyor shall possess the same power in the City and County in making surveys, plats and certificates as is or may from time to time be given by law to county surveyors, and the official acts and all plats, surveys and certificates of the County Surveyor shall have the same validity and be of the same force and effect as are or may be given by law to those of county surveyors.

(e) Any and all references to the "Bureau of Architecture," "Bureau of Engineering," or "Bureau of Construction Management" in the San Francisco Municipal Code is deemed to be a reference to the "Department of Public Works." *Any reference to "San Francisco Public Works" or "Public Works" in the Municipal Code is deemed to be a reference to the Department of Public Works.*

(f) The Director of Public Works shall be authorized to adopt regulations and to perform official acts within the regulatory authority of the Department of Public Works by approval and issuance of an order.

Section 6. The Public Works Code is hereby amended by revising Sections 2.1.3 and 723, to read as follows:

SEC. 2.1.3. ADDITIONAL FEES.

In instances *where the actual costs of the* administration or processing of any *application, approval, or* permit *is in excess of* or will exceed the fee amount established pursuant to section 2.1.1, the Director, in his or her discretion, may require an applicant or permittee to pay a sum in excess of the subject fee amounts. This additional sum shall be sufficient to recover actual costs that the Department incurs and shall be charged on a time and materials basis. The

Director also may charge for any time and materials costs that other agencies, boards, commissions, or departments of the City incur in connection with the processing or administration of a particular application, *approval,* or permit. Whenever additional fees are or will be charged, the Director, upon request of the applicant or permittee, shall provide in writing the basis for the additional fees or an estimate of the additional fees to be charged.

SEC. 723. OBSTRUCTION OF ~~*STREETS*~~ *PUBLIC RIGHT-OF-WAY* PROHIBITED.

(a) It shall be unlawful for any person, firm or corporation, without permission from the Department of Public Works, to pile, cap or otherwise obstruct *or place obstructions upon, above, or below,* any ~~*street, lane, alley, place or court, or any portion thereof*~~*public right-of-way,* whether the same be graded or not. *"Public right-of-way" shall mean the area across, along, beneath, in, on, over, under, upon, and within the dedicated public alleys, boulevards, courts, lanes, roadways, sidewalks, spaces, streets, and ways within the City, as they now exist or hereafter will exist and which are or will be under the permitting jurisdiction of the Department of Public Works.*

(b) Any violation of this Section 723 shall be deemed a public nuisance subject to enforcement actions pursuant to Administrative Code Chapter 100, which is hereby incorporated in its entirety, Administrative Code Chapter 80, and Police Code Section 39-1, and other Public Works regulations, procedures, and actions adopted by order.

Section 7. The Police Code is hereby amended by revising Section 39-1, to read as follows:

SEC. 39-1. PROCEDURE FOR ASSESSMENT AND COLLECTION OF ADMINISTRATIVE PENALTIES FOR SPECIFIED LITTERING AND NUISANCE VIOLATIONS.

(a) This Section 39-1 shall govern the imposition, assessment, and collection of administrative penalties imposed pursuant to Sections 37, 38, and 63 of the Police Code~~;~~:

Sections 41.13, 283.1, 287, 288.1 and 600 of the Health Code~~,~~; ~~and~~ Sections 170, 173, 174, 174.2, *723, 723.5,* 724.5, and 794 of the Public Works Code*; and Section 22G.4 of the Administrative Code*.

* * * *

Section 8. Effective Date. This ordinance shall become effective 30 days after enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board of Supervisors overrides the Mayor's veto of the ordinance.

Section 9. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors intends to amend only those words, phrases, paragraphs, subsections, sections, articles, numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal Code that are explicitly shown in this ordinance as additions, deletions, Board amendment additions, and Board amendment deletions in accordance with the "Note" that appears under the official title of the ordinance.

Section 10. Severability. If any section, subsection, sentence, clause, phrase, or word of this ordinance, or any application thereof to any person or circumstance, is held to be invalid or unconstitutional by a decision of a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions or applications of the ordinance. The Board of Supervisors hereby declares that it would have passed this ordinance and each and every section, subsection, sentence, clause, phrase, and word not declared invalid or unconstitutional without regard to whether any other portion of this ordinance or application thereof would be subsequently declared invalid or unconstitutional.

Section 11. Undertaking for the General Welfare. In enacting and implementing this ordinance, the City is assuming an undertaking only to promote the general welfare. It is not assuming, nor is it imposing on its officers and employees, an obligation for breach of which it is liable in money damages to any person who claims that such breach proximately caused injury.

APPROVED AS TO FORM:
DENNIS J. HERRERA, City Attorney

By: _____
CHRISTOPHER T. TOM
Deputy City Attorney

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FILE NO. 191033

LEGISLATIVE DIGEST

[Administrative, Public Works, Police Codes - Establishing Office of Emerging Technology - Requiring Permits for Using Emerging Technology Devices on Public Right-of-Ways]

Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works; amending the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; amending the Administrative Code to codify the Public Works Director's authority to take official actions, as defined herein, including adopting regulations for the pilot operation of emerging technology devices; amending the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for unlawful obstruction of the public right-of-way, including operation of emerging technology devices without a required permit; and affirming the Planning Department's determination under the California Environmental Quality Act.

Background Information

Presently, the City does not have an office that is tasked with evaluating the City-wide effects of emerging technologies on City resources, infrastructure, and residents. This ordinance establishes an Office of Emerging Technology in accordance with Board Resolution No. 102-18, which established principles for the regulation of emerging technology and urged the City Administrator to convene an emerging technology working group, and the final report of the Emerging Technology Working Group.

Amendments to Current Law

1. New Administrative Code Chapter 22G (Office of Emerging Technology)

   - As proposed, Administrative Code Chapter 22G would establish the Office of Emerging Technology ("OET"). In addition, Chapter 22G would attempt to streamline and coordinate the City's review and permitting of Emerging Technologies through the evaluation of pilot projects and the formulation of legislative and policy recommendations for consideration by the Board of Supervisors.
   - "Emerging Technologies" would include "one or more physical objects, whether mobile or stationary, that constitute or incorporate new electronic or mobile technologies or applications of technology and which are proposed for use upon, above, or below City property and/or public right-of-way. Characteristics of new electronic or mobile technologies or applications of technology include but are not limited to designation of the technology as a beta, test, or pre-sale product or system or application software;

lacking written evaluation or analysis for safety purposes by any regulatory body of the United States, the State of California, or the City."

- OET would be housed in the Department of Public Works and headed by the OET Director. OET would function City-wide subject to the existing authority of "Special Jurisdiction Agencies" (defined as the Recreation and Park Commission, the Airport Commission, SFMTA, the Port of San Francisco, and SFPUC) and applicable limitations under California law and/or the Charter. The ordinance will not abridge, modify, or alter the authority of the Special Jurisdiction Agencies, however, any Special Jurisdiction Agency may adopt legislative or regulatory changes and enter into agreements with other City Departments to implement the ordinance consistent with State law, the Charter, the Municipal Code, and City ordinances.
- OET's powers and duties would include the following:
    - *Emerging Technology Front Door.* OET will provide informational resources to Emerging Technology Companies to help enable such businesses to determine which permitting, regulatory, and other requirements may be applicable to the operation of the Emerging Technology in San Francisco. OET will be the City's point of contact for providing information to and facilitating dialogue among Emerging Technology Companies and San Francisco residents, workers, local businesses, visitors, and other members of the public regarding Emerging Technologies. In addition, OET will receive comments, ideas, and concerns about Emerging Technology.
    - *Testing, Evaluation, and Data Collection and Sharing.* OET will strive to provide Emerging Technology Companies with consistent and agile processes for safely developing, operating, and testing products and services in public spaces. OET will research, design, and implement methods for testing, evaluating, and measuring the effects of Emerging Technology and will coordinate City Department efforts to develop data collection and evaluation criteria regarding the effects of Emerging Technology on San Francisco residents and City resources and infrastructure. OET will collaborate with other City Departments regarding the testing, evaluation, permitting, and regulation of Emerging Technology within the City, and data collection and sharing methods and protocols.
    - *Evaluation of Proposed Pilot Projects.* OET will receive and review pilot project proposals, and will deny or approve a pilot project proposal, subject to the project sponsor's obtaining additional agency approvals that are required, and complying with all applicable conditions of approval. OET will facilitate the referral and review of pilot project applications by appropriate City Departments and the issuance of testing and other permits by City Departments, as applicable, to help ensure Emerging Technologies can operate to serve the public good while minimizing harms to public health, safety, welfare, and convenience, and public spaces; and to facilitate the streamlined and consolidated issuance of permits and consideration of appeals.

- *Thought Leadership and Policy Development.* OET will: (A) investigate, research, and consult subject matter experts regarding the development, usage, and effects of Emerging Technology on the City's resources, infrastructure, and residents, particularly the most vulnerable members of the San Francisco community including seniors, children, economically disadvantaged individuals, and persons with mobility or other medical or health limitations; (B) support responsive policy development in areas such as equity, accessibility, privacy, and responsible and sustainable use of data; (C) focus on and monitor existing and evolving accessibility standards; and (D) make and provide support for recommendations to the Board of Supervisors, the Mayor, and other City Departments regarding amendments and updates to the Municipal Code and City regulations and processes to address the challenges posed and opportunities presented by Emerging Technologies.
- *Communication.* OET will research, develop, and apply best practices to facilitate communication and share information regarding Emerging Technologies among City departments, Emerging Technology companies, and stakeholders.
- *Forecasting.* OET will create partnerships with businesses, organizations, educational institutions, and government agencies separate from the City to learn from deployments of Emerging Technologies outside of San Francisco and related Emerging Technology trends. OET will host gatherings, forums, and presentations about Emerging Technology priority issues facing San Francisco.

- Pilot Project Review, Approval, and Written Notice to Proceed.
  - Under the ordinance, subject to certain exemptions, an Emerging Technology company seeking to operate an Emerging Technology upon, over, or under City property or the public right-of-way, would be required to first obtain approval of a pilot project proposal from the OET Director, then comply with all conditions of the Approval, and then receive a written notice informing the applicant that the pilot project may proceed.
  - The OET Director may determine criteria for evaluation of pilot project applications. In addition, the OET Director's evaluation of applications may consider, among other factors, whether the pilot project is intended to yield information that could be used to safeguard and further public health, safety, and welfare; develop technical knowledge and expertise regarding the Emerging Technology; or develop best practices and regulatory requirements; or whether the pilot project poses unknown or unreasonable risks to public health, safety, and welfare. In addition, the OET Director may consider the extent to which an applicant has the capacity to meet the permit terms based on past experience operating permit programs, including, but not limited to, the applicant's compliance with applicable laws.
  - An Emerging Technology company would be exempt from the need to obtain Approval from the OET Director if the Emerging Technology company demonstrates that the proposed activities are, in their entirety, independently

authorized by federal law or California law, or if the Proposed Activities are entirely within the jurisdiction of one Special Jurisdiction Agency, or if the Proposed Activities are entirely within the jurisdiction of more than one Special Jurisdiction Agency and are governed by an agreement approved by each applicable Special Jurisdiction Agency.

- Annual Reports. No later than one year from the effective date of the ordinance, and annually thereafter, OET will submit to the Board of Supervisors and the Mayor an Emerging Technology report that describes the work performed by OET including the pilot project proposals received, reviewed, approved, and/or completed; the OET Director's analysis and recommendations regarding each pilot project; OET's analysis of Emerging Technology data, including the effects of Emerging Technologies on public spaces and the labor market, and the OET Director's conclusions and recommendations regarding such data. These annual reports will include recommendations that the City, including Special Jurisdiction Agencies, take legislative and/or administrative actions to modify, streamline, consolidate, amend, or terminate, as applicable, existing permit programs and requirements; to create new permit programs; and to streamline or consolidate regulatory review and approval processes and requirements among City Department Partners. The annual reports will include recommendations that the Board adopt or refrain from adoption of new legislation to regulate, deregulate, allow, or prohibit such Emerging Technologies upon, above, or below public property or the public right-of-way.

2. New Public Works Code Section 723.5 (Testing Emerging Technology Devices on Public Right-of-Ways – Permit Required)

- As proposed, Public Works Section 723.5 would establish a pilot permit program administered by the Public Works Director (in consultation with all applicable City departments) to regulate and temporarily authorize the physical operation, testing, and/or placement of certain Emerging Technology devices upon, above, or below City sidewalks, public right-of-ways, and property within the jurisdiction of Public Works. Emerging Technology devices permitted under Section 723.5 will be required to comply with certain operational requirements intended to protect the public health, safety, and welfare.
- Notably, Section 723.5 will not govern the operation of Emerging Technology Devices on City streets or highways, or public property subject to the sole jurisdiction of one or more Special Jurisdiction Agencies (as defined in Administrative Code Chapter 22G), unless such agencies authorize the application of this Section to such City streets or highways, or public property.
- Permit applicants will be required to post written notices of their pilot permit applications and members of the public will have an opportunity to comment on and request a public hearing regarding the permit application.

- The Public Works Director's approval or denial of a pilot permit application, or the Director's modification, suspension, or revocation of a pilot permit, may be appealed to the Board of Appeals.
- Prior to the expiration of the pilot project permit, Public Works will provide a pilot project performance report to the OET Director to evaluate the performance of the pilot project and determine whether, based on the pilot project, the Emerging Technology device may be operated safely and feasibly on City sidewalks and public right-of-ways beyond the term of the pilot project.

3. Amendments to Administrative Code Section 2A.190 (Department of Public Works)

- This ordinance includes conforming amendments to Administrative Code Section 2A.190 to assist with the implementation of this ordinance.
- A new subsection (f) will be added to Section 2A.190 to codify the Public Works Director's authority to adopt regulations and to perform official acts within the regulatory authority of the Public Works Department by approval and issuance of an order.

4. Amendments to Public Works Code Section 2.1.3 (Additional Fees)

- This ordinance includes conforming amendments to Public Works Code Section 2.1.3 assist with the implementation of this ordinance.
- As amended, Section 2.1.3 would authorize the Public Works Director to require an applicant or permittee to pay additional fees, in excess of the established fee amounts, to cover City Departments' actual costs of administering or processing any applicable application, approval, or permit.

5. Amendments to Public Works Code Section 723 (Obstruction of Public Right-of-Way Prohibited)

- This ordinance includes conforming amendments to Public Works Code Section 723 to assist with the implementation of this ordinance.
- As amended, Section 723 would prohibit the obstruction of public right-of-ways without permission from Public Works. Any violation of Section 723 would be a public nuisance subject to enforcement actions pursuant to the Administrative Code, the Police Code, and Public Works regulations and procedures.

6. Amendments to Police Code Section 39-1 (Procedure for Assessment and Collection of Administrative Penalties for Specified Littering and Nuisance Violations)

- This ordinance includes conforming amendments to Police Code Section 39-1, which governs the imposition, assessment, and collection of administrative penalties, to assist with the implementation of this ordinance.

- As amended, Section 39-1 would include new references to Public Works Code Sections 723 and 723.5, and Administrative Code Section 22G.4.

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Item 1 File 19-1033	Department: General Services Agency - Department of Public Works (DPW)

EXECUTIVE SUMMARY

Legislative Objectives

- The proposed ordinance would: 1) amend the Administrative Code to create an Office of Emerging Technology ("Office") within the Department of Public Works (Public Works); 2) amend the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; 3) amend the Administrative Code to codify the Public Works Director's authority to take official actions, including adopting regulations for the pilot operation of emerging technology devices; 4) amend the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for operating an emerging technology without the prior approval of the Office of Emerging Technology; and 5) affirm the Planning Department's determination that the actions contemplated in the ordinance comply with the California Environmental Quality Act (CEQA).

Key Points

- In April 2018, the Board of Supervisors approved a resolution adopting guiding principles to inform future legislation regulating emerging technology and urging the City Administrator to inform legislation by convening a working group. The Emerging Technology Open Working Group released a report in January 2019 to streamline and coordinate the City's review and permitting of emerging technologies.
- Under the proposed ordinance, "emerging technologies" would include "one or more physical objects, whether mobile or stationary, that constitute or incorporate new electronic or mobile technologies or applications of technology and which are proposed for use upon, above, or below City property and/or public right-of-way."

Fiscal Impact

- The FY 2019-20 Public Works budget includes $250,000 in initial funding for the Office of Emerging Technology. The $250,000 will offset costs of three existing Public Works positions that will direct a portion of their time to the Office of Emerging Technology as needed.
- The proposed ordinance includes fees for work related to the Office of Emerging Technology that may cover or offset future costs. The fee for the initial application for review of a pilot project proposal and for any renewed application will be $2,006. The proposed ordinance would also authorize the Office of Emerging Technology to require an applicant or permittee to pay additional fees to cover departmental costs associated with reviewing the pilot program proposal. Operating an emerging technology without approval from the Office of Emerging Technology would result in administrative fines up to $1,000 per day, criminal fines up to $100 per day for the first violation, and civil penalties up to $500 per day.

Recommendation

- Approval of the proposed ordinance is a policy matter for the Board of Supervisors.

MANDATE STATEMENT

City Charter Section 2.105 states that all legislative acts shall be by ordinance, approved by a majority of the members of the Board of Supervisors.

BACKGROUND

In April 2018, the Board of Supervisors approved a resolution adopting guiding principles to inform future legislation regulating emerging technology and urging the City Administrator to inform legislation by convening a working group (File 17-1123)[1]. In June 2018, the City Administrator created the Emerging Technology Open Working Group to inform future legislation on emerging technologies.[2] In January 2019, the City Administrator's Office issued the Final Report of the Emerging Technology Open Working Group, which included five recommendations: (1) to create a "front door" for emerging technology, (2) to improve communication with the community, (3) to safely test and evaluate new technologies, (4) to support responsive policy development, and (5) to implement smart forecasting by discussing emerging technology with experts. The City does not currently have an office that is tasked with evaluating the City-wide effects of emerging technologies on San Francisco residents and City resources and infrastructure. The proposed ordinance is in response to the Board of Supervisors April 2018 resolution, and recommendations of the working group to streamline and coordinate the City's review and permitting of emerging technologies.

Under the proposed ordinance, "emerging technologies" would include "one or more physical objects, whether mobile or stationary, that constitute or incorporate new electronic or mobile technologies or applications of technology and which are proposed for use upon, above, or below City property and/or public right-of-way."

DETAILS OF PROPOSED LEGISLATION

The proposed ordinance would:

- Amend the Administrative Code to create an Office of Emerging Technology ("Office") within the Department of Public Works (Public Works);
- Amend the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction;

[1] The approved resolution states: "The Board of Supervisors is committed to investigating and adopting legislation including recommendations for a dedicated Office of Emerging Technology with appropriate staffing to ensure that City government is adequately nimble and responsive to address the impacts of emerging technologies in San Francisco."

[2] The Working Group included representatives from the City Administrator's Office, the Committee on Information Technology (COIT), Department of Technology, San Francisco Municipal Transportation Agency, San Francisco County Transportation Authority, Mayor's Office on Disability, and Public Works. Representatives from various community based and business organizations attended the meetings.

- Amend the Administrative Code to codify the Public Works Director's authority to take official actions, including adopting regulations for the pilot operation of emerging technology devices;
- Amend the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for operating an emerging technology without the prior approval of the Office of Emerging Technology; and
- Affirm the Planning Department's determination that the actions contemplated in the ordinance comply with the California Environmental Quality Act (CEQA).

The Office of Emerging Technology

Under the proposed ordinance, the Office of Emerging Technology would be housed in Public Works and headed by a director. Companies that wish to deploy emerging technologies (as defined above) in San Francisco would have to submit to the Office of Emerging Technology a proposal to deploy their emerging technology as a pilot project for review and approval of the Office of Emerging Technology and any other City agency that is required to approve the activities proposed as part of the pilot project. In reviewing applications, the Office will consult all applicable City agencies to determine whether the pilot project warrants approval. A pilot project application may be approved as proposed, approved with modifications, denied, or denied in part. After the applicant has obtained the Office's approval and all required City agency approvals, the Office may authorize the pilot project for up to 12 months. The Office would then evaluate the results of the pilot project and make recommendations on changes to City laws, regulations, or policies necessary to accommodate, regulate, and ensure the safe operation of the emerging technology.

Under the proposed ordinance, the Office of Emerging Technology's other key responsibilities would include the following:

- Assist emerging technology companies in understanding permitting and other regulatory requirements to operate within the City;
- Evaluate the impact of emerging technology on San Francisco residents and City resources and infrastructure;
- Support policy development to manage the impact of emerging technologies in areas such as equity, accessibility, privacy, and responsible and sustainable use of data;
- Facilitate communication regarding emerging technologies among City departments, emerging technology companies, and other stakeholders; and
- Provide annual reports of Office of Emerging Technology's activities and recommendations to the Board of Supervisors and to the Mayor.

The Office of Emerging Technology's jurisdiction over emerging technology would be City-wide, except for areas under the jurisdiction the following departments: Recreation and Park Department, the Airport, San Francisco Municipal Transportation Agency (SFMTA), the Port, and San Francisco Public Utilities Commission (SFPUC). If a technology is fully authorized by State or Federal law, it would be exempt from the Office of Emerging Technology's review.

FISCAL IMPACT

The FY 2019-20 Public Works budget includes $250,000 in initial funding for the Office of Emerging Technology. According to the Public Works Finance Manager, Mr. Bruce Robertson, the $250,000 will offset costs of three existing Public Works positions that will direct a portion of their time to the Office of Emerging Technology as needed. The Office of Emerging Technology work is expected to commence in December 2019. According to Mr. Robertson, the funding will be used to cover costs for an Office of Emerging Technology Director and two additional staff to direct and implement the Office, support outreach, provide subject matter expertise in reviewing emerging technology proposals and establish pilot program plans. Table 1 below shows the proposed budget for the Office of Emerging Technology for FY 2019-20.

Table 1. Proposed Office of Emerging Technology FY 2019-20 Budget

		FY 2019-20		
Position	FTE	Salary & Fringe	Overhead	Total
0932 Manager IV	0.25	$59,591	$40,938	$100,529
5408 Coordinator of Citizen Involvement	0.25	$45,616	$39,765	$85,381
5207 Associate Engineer	0.15	$28,445	$24,883	$53,328
Materials & Supplies				$10,762
Total				**$250,000**

Source: Department of Public Works

According to Mr. Robertson, the duties of the three positions will be as follows:

0932 – Manager IV (Director) – This position will provide oversight and direction of day-to-day program operations, research and developing standards, guidelines, procedures, and evaluation criteria tools; department liaison with city departments, technology company representatives, and main point person for the Office of Emerging Technology implementation.

5207 – Associate Engineer – This position will provide technical review, quality assurance and control, site meetings for new emerging technology procedures and will work with IT professionals for implementation.

5408 – Outreach and Education Coordinator – This position will provide outreach to technology company representatives as well as community outreach and community feedback and input, education, and other public facing duties, business outreach, and research new emerging technologies.

As noted above, Public Works' FY 2019-20 budget included $250,000 for the Office of Emerging Technology. The FY 2020-21 budget for the Office of Emerging Technology will be subject to Board of Supervisors approval during the June 2020 budget process.

Potential Revenues

Fees

The proposed ordinance includes fees for work related to the Office of Emerging Technology that may cover or offset future costs. Under the proposed ordinance, the fee for the initial application for review of a pilot project proposal and for any renewed application will be $2,006. The proposed ordinance would also authorize the Office of Emerging Technology to require an applicant or permittee to pay additional fees to cover departmental costs associated with reviewing the pilot program proposal.

Fines

Under the proposed ordinance, operating an emerging technology (as defined above) without approval from the Office of Emerging Technology would result in administrative fines up to $1,000 per day, criminal fines up to $100 per day for the first violation, and civil penalties up to $500 per day.

Mr. Robertson states that the overall revenue generated from the permit fees and fines is currently unknown because of the uncertainty about the number of emerging technologies and permittees that will arise in the coming years.

RECOMMENDATION

Approval of the proposed ordinance is a policy matter for the Board of Supervisors.

BOARD of SUPERVISORS

City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

NOTICE OF PUBLIC HEARING

BOARD OF SUPERVISORS OF THE CITY AND COUNTY OF SAN FRANCISCO

BUDGET AND FINANCE COMMITTEE

NOTICE IS HEREBY GIVEN THAT the Budget and Finance Committee will hold a public hearing to consider the following proposal and said public hearing will be held as follows, at which time all interested parties may attend and be heard:

Date: **November 20, 2019**

Time: **10:00 a.m.**

Location: **Legislative Chamber, Room 250, located at City Hall, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA**

Subject: **File No. 191033. Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works; amending the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; amending the Administrative Code to codify the Public Works Director's authority to take official actions, as defined herein, including adopting regulations for the pilot operation of emerging technology devices; amending the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for unlawful obstruction of the public right-of-way, including operation of emerging technology devices without a required permit; and affirming the Planning Department's determination under the California Environmental Quality Act.**

Pilot Project proposal is a proposal seeking authorization to perform a Pilot Project. A Pilot Project means the operation or use of an Emerging Technology upon, above, or below City property and/or the public right-of-way in the City's jurisdiction, as authorized by the Office of Emerging Technology, for a limited duration for purposes including but not limited to testing and evaluation in anticipation of potential commercial uses.

If the legislation passes, the fee for the initial application for review of a Pilot Project proposal and for any renewal application ("Pilot Project Review Fee Deposit") shall be $2,006 payable to Public Works. The Pilot Project Review Fee Deposit shall be due at the time of application and shall be paid in addition to any other applicable fees authorized pursuant to the Municipal Code, including without limitation Public Works Code, Section 2.1.3, which shall be payable separate from the Pilot Project Review Fee Deposit as such additional costs are incurred by the Office of Emerging Technology and City Departments in the administration of the Pilot Project. Beginning with fiscal year 2021-2022, the fee set forth in this Public Works Code, Section 22G.4, may be adjusted each year, without further legislative action, in the following manner.

Additional Fees. In instances where the actual costs of the administration or processing of any application, approval, or permit is in excess of or will exceed the fee amount established pursuant to Public Works Code, Section 2.1.1, the Director of Public Works, in his or her discretion, may require an applicant or permittee to pay a sum in excess of the subject fee amounts. This additional sum shall be sufficient to recover actual costs that Public Works incurs and shall be charged on a time and materials basis. The Director of Public Works also may charge for any time and materials costs that other agencies, boards, commissions, or departments of the City incur in connection with the processing or administration of a particular application, approval, or permit. Whenever additional fees are or will be charged, the Director of Public Works, upon request of the applicant or permittee, shall provide in writing the basis for the additional fees or an estimate of the additional fees to be charged.

In accordance with Administrative Code, Section 67.7-1, persons who are unable to attend the hearing on this matter may submit written comments to the City prior to the time the hearing begins. These comments will be made part of the official public record in this matter, and shall be brought to the attention of the members of the Committee. Written comments should be addressed to Angela Calvillo, Clerk of the Board, City Hall, 1 Dr. Carlton B. Goodlett Place, Room 244, San Francisco, CA 94102. Information relating to this matter is available in the Office of the Clerk of the Board. Agenda information relating to this matter will be available for public review on November 15, 2019.

Angela Calvillo
Clerk of the Board

DATED: November 8, 2019
PUBLISHED: November 10 and 14, 2019

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EXM# 3313524

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NOTICE OF PUBLIC HEARING BOARD OF SUPERVISORS OF THE CITY AND COUNTY OF SAN FRANCISCO BUDGET AND FINANCE COMMITTEE WEDNESDAY, NOVEMBER 20, 2019 - 10:00 AM CITY HALL, LEGISLATIVE CHAMBER, ROOM 250, 1 DR. CARLTON B. GOODLETT PLACE, SAN FRANCISCO, CA

NOTICE IS HEREBY GIVEN THAT the Budget and Finance Committee will hold a public hearing to consider the following proposal and said public hearing will be held as follows, at which time all interested parties may attend and be heard: File No. 191033. Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works; amending the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; amending the Administrative Code to codify the Public Works Director's authority to take official actions, as defined herein, including adopting regulations for the pilot operation of emerging technology devices; amending the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for unlawful obstruction of the public right-of-way, including operation of emerging technology devices without a required permit; and affirming the Planning Department's determination under the California Environmental Quality Act. Pilot Project proposal is a proposal seeking authorization to perform a Pilot Project. A Pilot Project means the operation or use of an Emerging Technology upon, above, or below City property and/or the public right-of-way in the City's jurisdiction, as authorized by the Office of Emerging Technology, for a limited duration for purposes including but not limited to testing and evaluation in anticipation of potential commercial uses. If the legislation passes, the fee for the initial application for review of a Pilot Project proposal and for any renewal application ("Pilot Project Review Fee Deposit") shall be $2,006 payable to Public Works. The Pilot Project Review Fee Deposit shall be due at the time of application and shall be paid in addition to any other applicable fees authorized pursuant to the Municipal Code, including without limitation Public Works Code, Section 2.1.3, which shall be payable separate from the Pilot Project Review Fee Deposit as such additional costs are incurred by the Office of Emerging Technology and City Departments in the administration of the Pilot Project. Beginning with fiscal year 2021-2022, the fee set forth in this Public Works Code, Section 22G.4, may be adjusted each year, without further legislative action, in the following manner. Additional Fees. In instances where the actual costs of the administration or processing of any application, approval, or permit is in excess of or will exceed the fee amount established pursuant to Public Works Code, Section 2.1.1, the Director of Public Works, in his or her discretion, may require an applicant or permittee to pay a sum in excess of the subject fee amounts. This additional sum shall be sufficient to recover actual costs that Public Works incurs and shall be charged on a time and materials basis. The Director of Public Works also may charge for any time and materials costs that other agencies, boards, commissions, or departments of the City incur in connection with the processing or administration of a particular application, approval, or permit. Whenever additional fees are or will be charged, the Director of Public Works, upon request of the applicant or permittee, shall provide in writing the basis for the additional fees or an estimate of the additional fees to be charged. In accordance with Administrative Code, Section 67.7-1, persons who are unable to attend the hearing on this matter may submit written comments to the City prior to the time the hearing begins. These comments will be made part of the official public record in this matter, and shall be brought to the attention of the members of the Committee. Written comments should be addressed to Angela Calvillo, Clerk of the Board, City Hall, 1 Dr. Carlton B. Goodlett Place, Room 244, San Francisco, CA 94102. Information relating to this matter is available in the Office of the Clerk of the

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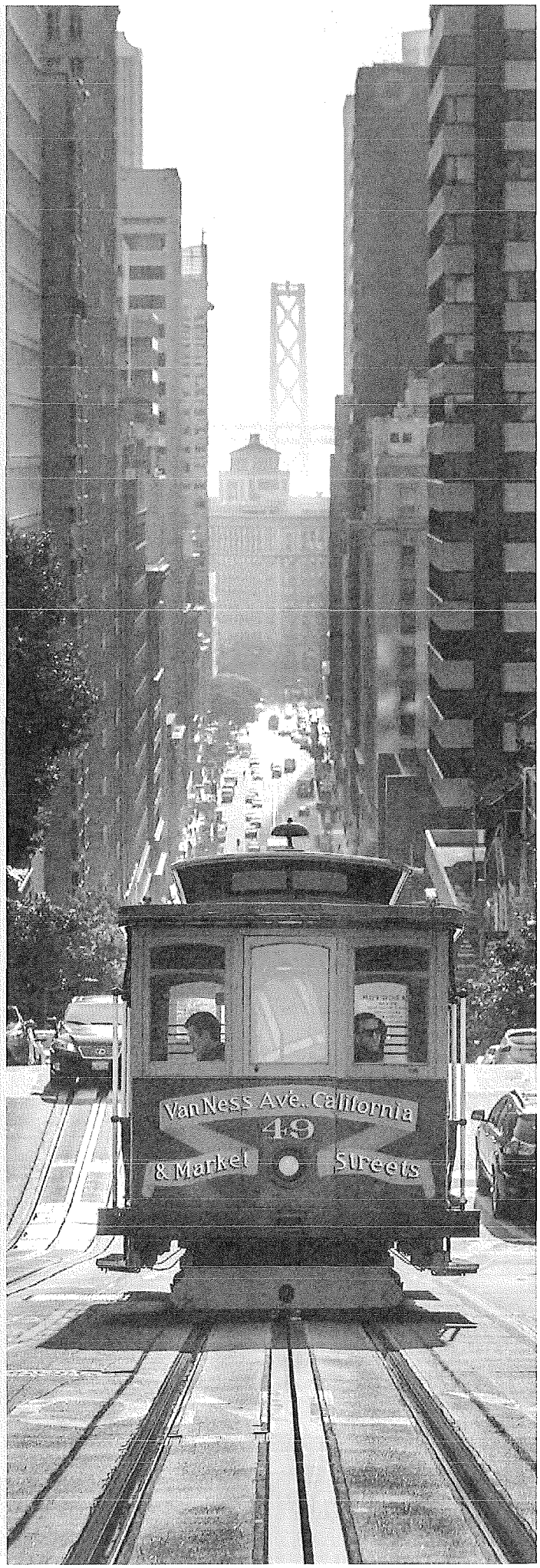
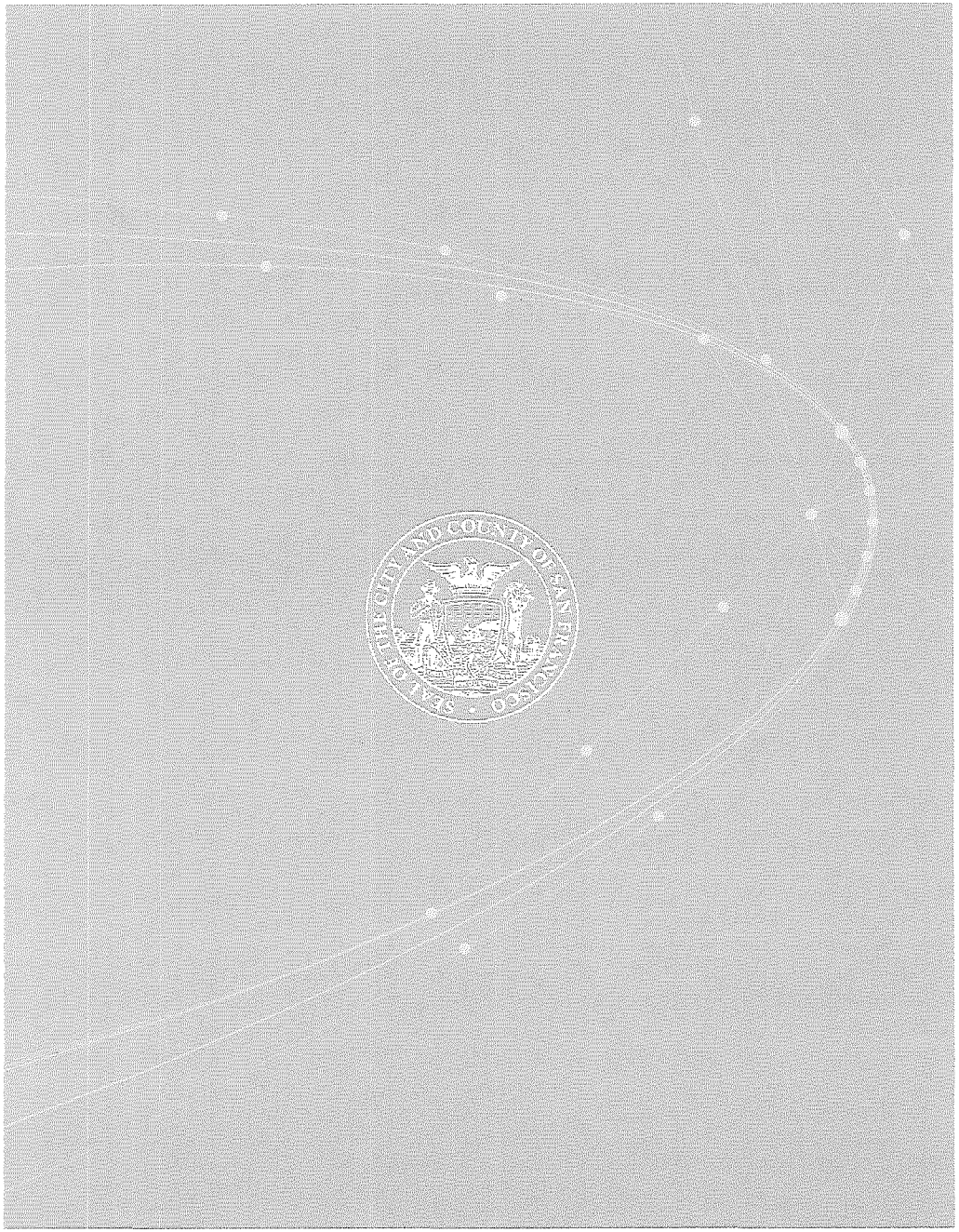
Board. Agenda information relating to this matter will be available for public review on November 15, 2019. -- Angela Calvillo, Clerk of the Board.

FINAL REPORT OF THE EMERGING TECHNOLOGY OPEN WORKING GROUP

CITY & COUNTY OF SAN FRANCISCO





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About this Report

The Emerging Technology Open Working Group was led by City Administrator Naomi Kelly, the highest-ranking non-elected official of San Francisco City and County government. In this capacity, the City Administrator oversees the General Services Agency consisting of 25 departments, divisions, and programs that include the Public Works Department, and Department of Technology among others.

Supporting the City Administrator in this effort were a variety of technology and regulatory leaders in the City, including:

- Committee on Information Technology
- San Francisco County Transportation Authority
- DataSF
- Department of Technology
- Digital Services Office
- Mayor's Office on Disability
- San Francisco Municipal Transportation Agency
- Office of Civic Innovation
- Public Works

Acknowledgements

On behalf of the City Administrator's Office, we would like to thank all the different residents, community groups, and companies that attended the Emerging Technology Open Working Group. Without your interest and passion, none of this would have been possible.

We also want to thank the organizations that attended every meeting, including:

- Community Technology Network
- Daimler
- Healthright360
- Marble
- Microsoft
- Postmates
- sf.citi
- WalkSF
- Zipcar

We also want to extend a very special thank you to our facilitator OnStrategy who provided incredible support throughout the Open Working Group. Thank you.

To view a full list of organizations that participated, please visit: https://emergingtech.sfgov.org/participants

Dear Mayor Breed and Members of the Board of Supervisors,

San Francisco has long been a center of innovation and technological progress, and local government has an important role to play in effectively managing this change. Over the last several years, we have seen a number of new technologies launched in San Francisco without public input. It is clear that technology is part of the social fabric of life in San Francisco. Yet as keepers of the public right-of-way and other public spaces, we must develop appropriate policy measures to mitigate risks and unintended impacts on San Franciscans and our infrastructure.

Last year, the Board of Supervisors passed a resolution asking my office to convene a Working Group to focus on San Francisco's response to emerging technology. We took a novel approach: invite every interested party, listen to their input, and find consensus on the immediate steps the City can take to balance everyone's concerns. With the input of community groups, industry, and experts, I am pleased to present recommendations to guide City and County of San Francisco policy in this important area.

My recommendations are as follows:

1. Create a "Front Door" for Emerging Technology to provide a central point of contact for companies and the public.
2. Improve communication with the community by informing technology companies of best practices to engage local residents and businesses.
3. Safety test and evaluate new technologies with clear evaluation criteria.
4. Support responsive policy development in areas such as equity, accessibility, privacy and data ethics.
5. Foster smart forecasting through expert collaboration.

These recommendations are intended to help us keep an open dialogue with the community to discuss the introduction of new technologies before their release. Measuring their impact will provide policymakers essential information to make informed choices. Transparency in the process will ensure public participation and improved outcomes.

The recommendations provide policymakers direction on how we can better incorporate new technologies in a way that will support our values. We look forward to continuing the discussion on how to build our public spaces to be welcoming and accessible to everyone.

Sincerely,

Naomi M. Kelly
City Administrator

Executive Summary

San Francisco values reflect the diversity and richness of our neighborhoods and the people who live and work here. Even as our city changes, our values help guide us towards the community we want to live in.

The Emerging Technology Open Working Group was led by City Administrator Naomi Kelly to help develop a series of policy and program recommendations for local government. These final recommendations reflect the contributions of community members, companies, local government, and many others.

A Definition for Emerging Technology

Emerging technologies are defined to include new technologies, applications of technology, and business models that:

1. Are in development and have only been tested at market level on a limited basis.
2. Will have a measurable impact economically, socially, or morally in the next five to ten years.
3. Do not fit within existing regulatory code.

Discussing the Impact of Emerging Technologies

The Open Working Group identified seven major tracks as the major cross-cutting issues emerging technologies present San Francisco.

Track 1 - Collaboration and Partnerships: There is often a lack of trust and understanding between companies and local government. Companies find it difficult to know where to start when interested in operating in the City.

Track 2 - Agile Permitting and Accountability: Regulation is often reactive and lacks a process to respond to rapidly changing technologies and business models.

Track 3 - Community Engagement and Priorities: The City should better communicate strategic goals, challenges, and priorities. Companies need help with understanding community needs.

Track 4 - Equitable Benefits: In some cases, technology only benefits certain types of people, expanding social and digital divides. Impacts from automation disproportionately affect workers from underserved communities.

Track 5 - Accessibility and Safety: Emerging technologies can negatively impact accessibility. The disability community's perspective needs to be shared with technology companies so they are not excluded.

Track 6 - Data Sharing and Privacy: There needs to be a process to share data between government and companies. Resident privacy is not always protected.

Track 7 - Forecasting: There needs to be a structure to talk about the future of technology and its impact on cities. Local government needs to anticipate impacts and proactively work with new technology companies.

Recommendations from the City Administrator

The following recommendations are from the City Administrator and describe some of the major deliverables and actions the City needs to take to better position San Francisco for the future.

Recommendation 1: Create A "Front Door" For Emerging Technology - San Francisco needs a single entrance for technology companies seeking to operate business in our public spaces. A Front Door to local government should be created for emerging technology companies in San Francisco to:

- Focus on the needs of residents, workers, small businesses, and visitors.
- Support adaptive and responsive policymaking.
- Manage a "certain and predictable" permitting process.

Recommendation 2: Improve Communication with the Community - The City should provide guidance to the technology companies on community needs and facilitate ongoing conversations. Some actions include:

- Develop a digital "Front Door" as a one-stop shop for City information.
- Act as a community liaison and communicate community priorities.

Recommendation 3: Safely Test and Evaluate New Technologies - The City should adopt a consistent and agile process that allows companies to safely develop and test products and services in public spaces. Careful evaluation and analysis of this testing phase will help inform the City of the extent of the service's impact and what permits may be required. Some actions include:

- Determine whether to permit testing of new technologies in San Francisco.
- Convene an interdepartmental group to establish evaluation criteria.
- Act as the primary liaison with companies during testing.

Recommendation 4: Support Responsive Policy Development - After testing emerging technologies, the Front Door should provide recommendations and hand off the permitting process to the appropriate agencies. The Front Door should provide technical expertise in the creation of legislation and permit frameworks specifically around equity, accessibility, privacy, data ethics, and data sharing. Some actions include:

- Make recommendations if a permit should be created and which Department is the best permitting authority.
- Determine data sharing requirements for compliance and enforcement.

Recommendation 5: Smart Forecasting through Expert Collaboration - The City should help build trust and strengthen relationships with technology companies, government, and the community. The Front Door should also regularly convene City stakeholders within local government to discuss upcoming technologies. Some actions include:

- Build collaborative partnerships and improve information sharing between cities.

Introduction

San Francisco values reflect the diversity and richness of our neighborhoods and the people who live and work here. Even as our city changes and we grapple with how to overcome our most pressing problems, our values help guide us towards the community we want to live in.

In recent years, new technologies have changed our society in many ways. This impact has been magnified with many of the world's most prominent companies located right here in San Francisco. Every day, we can see the next generation of revolutionary technologies being tested in our neighborhoods and on our streets. But even as our daily lives become more and more dependent on technology, we are still learning the extent of their impact.

The introduction of new and emerging technologies may hold a promise of better services and more convenience, but also bring new challenges and issues to overcome. Existing laws and regulations may not fully capture the impact of new technologies. For local government, our responsibility as a democratically representative body is to be stewards of the public interest and to protect the public from harm. Our rules and regulations reflect our community's needs and values.

The Emerging Technology Open Working Group was formed to host a dialogue on new and emerging technologies in our community. Originally called for by the Board of Supervisors, the working group was led by City Administrator Naomi Kelly to help develop a series of policy and program recommendations for local government.

Our work reflects the contributions of community members, companies, local government, and many others. We are proud of the tremendous support and engagement expressed throughout this process, and eager to faithfully represent their input in the final recommendations.

The following report contains an overview of our dialogue with the Emerging Technology Open Working Group and recommendations to prepare for the next generation of technologies.

For all information regarding the Emerging Technology Open Working Group, please go to our website at **http://emergingtech.sfgov.org/**.

San Francisco Values For Emerging Technologies

San Francisco embraces technology to enhance quality of life and our public spaces.

In 2018, the San Francisco's Board of Supervisors adopted Resolution 102-18 urging the City Administrator to create a working group to inform future legislation on emerging technologies. The intended purpose of the working group was to bring together community members, technology companies, and local government to support the City Administrator in the creation of policy recommendations.

Emerging technologies are defined to include new technologies, applications of technology, and business models that:

- **Are in development and have only been tested at market level on a limited basis.**
- **Will have a measurable impact economically, socially, or morally in the next five to ten years.**
- **Do not fit within existing regulatory code.**

Throughout the Open Working Group, we focused the dialogue on the impacts of technology rather than identify the next generation of technology products. However, our discussions referred to a variety of examples of "emerging technologies."

To help frame our discussion on the impacts and public benefits of emerging technologies, here are some prominent examples:

- Advanced Biometrics and Facial Recognition
- Algorithm Bias
- Artificial Intelligence and Machine Learning
- Autonomous Delivery Robots
- Blockchain
- Drones
- Transportation Network Companies
- Robotic Process Automation
- Virtual and Augmented Reality

Note: Definitions for common terms are available in Appendix A: Glossary of Terms.

The original resolution adopted by the Board of Supervisors identified several principles to include in working group discussions. These principles include:

- The Precautionary Principle states that every San Franciscan has an equal right to a healthy and safe environment and requires that our air, water, land, and food be of a sufficiently high standard that individuals and communities can live healthy, fulfilling, and dignified lives.
- Should provide a net common good, with consideration on whether such emerging technology benefits the few at the expense of the many.
- The safety, needs, and convenience of humans shall be prioritized over any emerging technology use.
- The needs of the most vulnerable members of our community, including seniors, children, and those with mobility or other limitations are adequately considered.
- The testing or piloting of any technology provide the greatest emphasis on ensuring public safety, including a manual human override as appropriate.
- Any direct or indirect costs on the use of public infrastructure should be paid by the owner or operator of the technology and not by the public.
- Data sharing with relevant public agencies should be a condition of any authorization to use the public realm.
- In evaluating the public benefit of any emerging technology, the potential impact on congestion on roads, sidewalks, and public spaces should be carefully considered.
- Where appropriate, provide preference to those technologies that support rather than reduce the labor force in San Francisco.
- Where appropriate and feasible, technologies should include labeling, individual permit identifiers, business information, and emergency contact information for those responsible for the deployment of products.
- Where technology should protect private information of individuals, such information should be protected and appropriate informed consent given.
- Public-Private partnerships in Emerging Technology should be considered and evaluated to the highest standard, including any benefits, impacts, and costs to the City or the public infrastructure.
- Any regulation should be nimble and responsive to changing conditions and demands.

Methodology:
Engaging Our Community

The City Administrator created the Emerging Technology Open Working Group in June 2018 to support the development of final recommendations. The Open Working Group met with the community over the following six months.

The Open Working Group's objectives were to:

- Engage the community and technology experts in the policy making process.
- Gather feedback on recommendations for a regulatory and permitting process that addresses use cases on land, in the air and water, inside buildings and underground.
- Develop a nimble and responsive governance framework that City Departments can use with emerging technology companies to partner with the City.

The Open Working Group meetings were broken into phases, with each building on the other to help the City Administrator develop final recommendations. Public meetings were pivotal points to gather input and provide direction for final recommendations.

RESEARCH PHASE. *Objectives:* City staff analyzes how other cities approach emerging technologies. Staff conduct interviews with experts to get perspective on problems and solutions.

LISTENING PHASE. *Objectives:* Gather information from the public on most important issues. Identify problems for focus of the remainder of the project.

Open Working Group Meeting Dates: July 9 & July 23

NEEDS IDENTIFICATION. *Objectives:* Identify the major values and problems we need to address.

Open Working Group Meeting Dates: August 17

SOLUTIONS DEFINITION. *Objectives:* Define what solutions must / not do and identify possible solutions to problems identified in previous phases.

Open Working Group Meeting Dates: September 17

SOLUTIONS IDENTIFICATION. *Objectives:* Define what solutions must / not do and identify possible solutions to problems identified in previous phases.

Open Working Group Meeting Dates: November 5

To help run the Open Working Group meetings, the City hired a outside facilitator OnStrategy. Over the course of five community meetings, 477 people RSVP'd to attend the meeting, 112 pages of session notes were written, and an additional 175 written comments were submitted via online surveys. In addition, the staff advisory team held a workshop with 19 departments, conducted 59 interviews with a variety of experts, and researched 28 cities and other organizations.

A full list of participating organizations is available at: https://emergingtech.sfgov.org/participants

Discussing the Impact of Emerging Technology

Opening the discussion to community groups, companies, and City staff provided a broad perspective on emerging technologies. The Open Working Group identified seven major tracks as the major cross-cutting issues emerging technologies present San Francisco.

Track 1 - Collaboration & Partnerships

Challenges:

There is often a lack of trust and understanding between companies and local government. Companies find it difficult to know where to start when interested in operating in the City. Each city's regulation s different without much sharing of lessons learned as to how they addressed specific technologies.

Guiding Questions:

- How might the City work with the community and emerging technology companies to solve common problems?
- How can companies and the City work and learn together to address the opportunities and impacts of emerging technologies?
- What incentives would be helpful to encourage collaboration with the City?
- How might we collaborate with other cities and jurisdictions with emerging technology deployments?
- How can we partner on critical safety, accessibility, and equity goals?

Track 2 - Agile Permitting & Accountability

Challenges:

Regulation is often reactive and lacks an agile process to respond to rapidly changing technologies and business models.

Regulation only recovers the cost of administering and enforcing permits, and does not take into account the costs related to the physical impacts of using public infrastructure.

Guiding Questions:

- How might the City better provide a certain and predictable permitting process for emerging technologies?
- How can we make the permitting process more agile and responsive?
- How do we make regulations easier to follow and understand?
- How can the public best engage with the City to ask questions and get feedback?

Track 3 - Community Engagement & Priorities

Challenges:

The City could better communicate strategic goals, challenges, and priorities in a way that new businesses and technology can solve. Companies need help with understanding community needs and opportunities and engaging with residents in neighborhoods.

Guiding Questions:

- How might we set goals for San Francisco in a way that involves everyone including residents, community groups, and businesses?
- How should City leaders work with the community to develop a vision for San Francisco?
- What are new ways the City can involve the community in decision making with regard to emerging technologies?

Track 4 - Equitable Benefits

Challenges:

Technology is underutilized in improving equity, and in some cases only benefits certain groups of people, expanding social and digital divides. Further, impacts from automation disproportionately affect workers from underserved communities.

Guiding Questions:

- How might we encourage new technologies that benefit all communities, especially low-income and underserved communities?
- What can we do to share the benefits of new technology?
- How do we prevent new technologies from expanding economic, social and digital divides?
- How do we protect underserved populations from new risks and dangers?

Track 5 - Accessibility & Safety

Challenges:

Depending on their application, emerging technologies can reduce accessibility. The disability community's perspective needs to be shared with technology companies so they are not excluded.

Guiding Questions:

- How might we make sure emerging technologies are safe and accessible to all SF residents, especially those with disabilities?
- How can we make sure people with disabilities can share the impact of new technologies on their lives?
- How do we make sure emerging technologies are safe to use in public spaces?
- How do we encourage design practices that emphasize improved accessibility and usability for all residents, including residents with disabilities?

Track 6 - Data Sharing & Privacy

Challenges:

There is no standard process to share data between local governments and companies. Resident privacy is not always protected.

Guiding Questions:

- How might the City encourage data sharing practices that promote a data-driven City while also respecting individual privacy?
- How do we best protect individual privacy?
- What technical and operational standards or practices are needed for data sharing with companies?

Track 7 - Forecasting

Challenges:

There is no formal structure with subject matter experts to talk about the future of technology and its impact on cities, making it difficult for local government to anticipate impacts and proactively work with new technology companies.

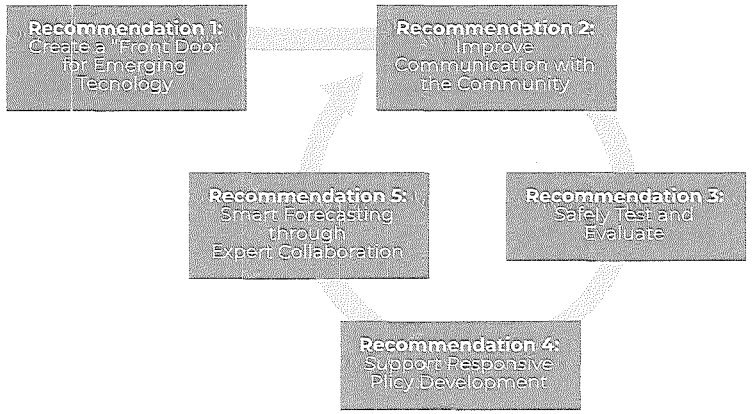
Guiding Questions:

- How might the City anticipate the next generation of technologies and business models?
- How can the City learn about new technologies, other than sales pitches?
- What kind of forum is appropriate to talk about the future?
- How can we better anticipate the impact of new technologies?

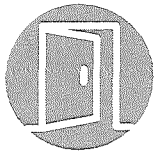
Recommendations from the City Administrator

Over the course of 2018, the Emerging Technology Open Working Group provided feedback on the impact of emerging technologies and possible policy actions. All input was consolidated for the City Administrator to develop policy recommendations to the Mayor and Board of Supervisors.

The following recommendations are from the City Administrator and describe some of the major deliverables and actions the City needs to take to better position San Francisco for the future. They are intended to help San Francisco embrace technology to enhance quality of life and our public spaces.



Recommendation 1:
Create a "Front Door" for Emerging Technologies



New and emerging technologies continue to be developed and launched in San Francisco. Permits are often required to operate on our streets and sidewalks but more is needed than just a new permitting process.
San Francisco needs to improve communication and collaboration with technology companies in order to anticipate the impact and benefit of their services, and make it clear what to do when a permit is necessary.

Recommendation: San Francisco needs a single entrance for technology companies seeking to operate in our public spaces. A Front Door to local government should be created for emerging technology companies in San Francisco.

Major responsibilities of an Emerging Technology Front Door include:

1. **Focus on the needs of residents, workers, small businesses, and visitors.** Local government should be an advocate for our community and help to create an ongoing dialogue so that new technologies benefit everyone.

   San Francisco also needs expertise to address the risks and challenges that come with some new technologies. The Front Door should bring forward community values around equity, accessibility, data ethics, cybersecurity, and privacy as new products and services are introduced in San Francisco.

2. **Support adaptive and responsive policymaking.** By definition, emerging technologies are still being developed and are not finished products. This makes evaluating impact that much harder for local government wanting to issue consistent and continuously relevant rules and regulations.

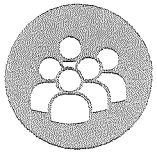
   The Front Door should understand how to adapt policy making to the prototyping process, and have experience creating controlled tests that both local government and future companies can learn from. The Front Door should lead impartial impact analysis in technical areas to better inform final policies.

3. **Manage a "certain and predictable" permitting process.** Ultimately, the Front Door should help companies understand what permits might apply to them and obtain the permits necessary to operate in San Francisco. Because emerging technologies may have impacts not accounted for in existing legislation, this process may include creating new legislation and new regulatory code.

San Francisco's Emerging Technology Front Door should be staffed with professionals with strong technology credentials who understand our community values and our regulatory environment.

Establishing a Front Door for emerging technologies is only a first step. The following recommendations describe some of the actions the Front Door and the City need to engage in to adapt to new and emerging technologies.

Recommendation 2:
Improve Communication with the Community



To succeed at anticipating new technologies and adapting the regulatory rules and process for unforeseen issues, San Francisco needs to improve dialogue with the community and technology ecosystem.

Recommendation: The City should provide guidance to the technology companies on community needs and opportunities. It should be easy to talk to the City to ask questions and to learn about our highest priorities. In the same manner, the City should be able to gather basic information on what new innovations are on the horizon and what will be introduced into our public spaces.

The Front Door should help begin a conversation between residents and the companies themselves. The City can then act as a bridge to connect companies and the neighborhoods they are directly impacting.

Major Deliverables:

- **Develop a digital "Front Door"** through the City's website and provide contact information. Online forms should be available to share basic information to start a dialogue when a company is considering launching. The website should be a one-stop shop for information on working with the City, especially if there are questions about permitting or regulation.
- The City should **act as a community liaison** and provide resources to facilitate communication between companies and neighborhoods. The City should pay particular attention to existing and evolving accessibility standards. As these new services are being developed, the City should help bring together a diverse group of stakeholders including people with disabilities, older adults, people of color, economically disadvantaged individuals, and others to make their voices heard.
- **The City should communicate community needs and priorities** and make information publicly available via our Open Data Portal, **with relevant dashboards highlighting priority areas.**
- When an opportunity arises, the City should also **call for solutions that help solve for specific challenges.**

Recommendation 3:
Safely Test and Evaluate New Technologies

By definition, emerging technologies are still in the development and testing phase. Their business models, use cases, and target markets are still being explored. For technologies that require testing in our public spaces, a new permitting process is needed.

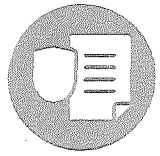
Recommendation: The City should adopt a consistent and agile process that allows companies to safely develop and test products and services in public spaces. This requires adjusting the permitting process to support the prototyping and testing through limited deployments.

Careful evaluation and analysis of this testing phase will help inform the City of the extent of the service's impact and what permits may be required. The City should develop criteria to evaluate new services on the basis of City values, equity, accessibility, data ethics, cybersecurity, and privacy among others.

Major Deliverables:

- Front Door should **collect information on companies that seek to test products or services in San Francisco.** Information should be collected on the expected number of users, location, impacts, risks, past experience.
- The City should **support a community dialogue** to discuss upcoming tests and their results. Resources and contact information should be made available for community, accessibility, and government stakeholders to promptly address impacts and concerns that arise during tests.
- The Front Door should make an initial determination on whether to test the technology in San Francisco. **The testing approach must ensure fairness and competition for additional companies in the market.** In collaboration with permitting departments, the Front Door should decide if the category of technology needs (a) an existing permit, (b) temporary testing permit, (c) no permit needed, or (d) if no test is allowed in San Francisco.
- **Convene an interdepartmental group to establish evaluation criteria** for the temporary testing permits. The Front Door should provide expertise on accessibility, cybersecurity, equity, privacy and data sharing.
- If a testing permit is issued, Front Door staff should act as the **primary liaison with companies** during testing phase to report back concerns and complaints as well as steering the company toward the most positive outcome for our communities. The Front Door should **coordinate metrics, timeline, geographic boundaries, and data sharing agreements for evaluation and compliance.**
- Front Door should develop **universal design standards for accessibility and safety** that make clear any non-negotiable constraints.
- The Front Door should facilitate connections between residents, especially the disability community members through **User Testing Forums.** Resources should be provided on best practices in accessible product development and service delivery. Resources should be provided on best practices in accessible product development and service delivery.

Recommendation 4:
Support Responsive Policy Development



Emerging technologies that complete the testing phase and are approved for Citywide release may need a more formal permit to continue to operate. Given new and emerging technologies often present issues not fully accounted for in existing regulatory code, this process can be cumbersome. Going forward, San Francisco needs a standard process to update regulatory code to address emerging technologies in an agile, transparent, and timely manner.

Recommendation: After testing emerging technologies, the Front Door should provide recommendations and hand off the permitting process to the appropriate agencies. Emerging technologies may impact several different parts of life in San Francisco, from public health and safety to public spaces and infrastructure. The experts responsible for keeping our City safe and secure should be responsible for the ongoing oversight and enforcement of the rules.

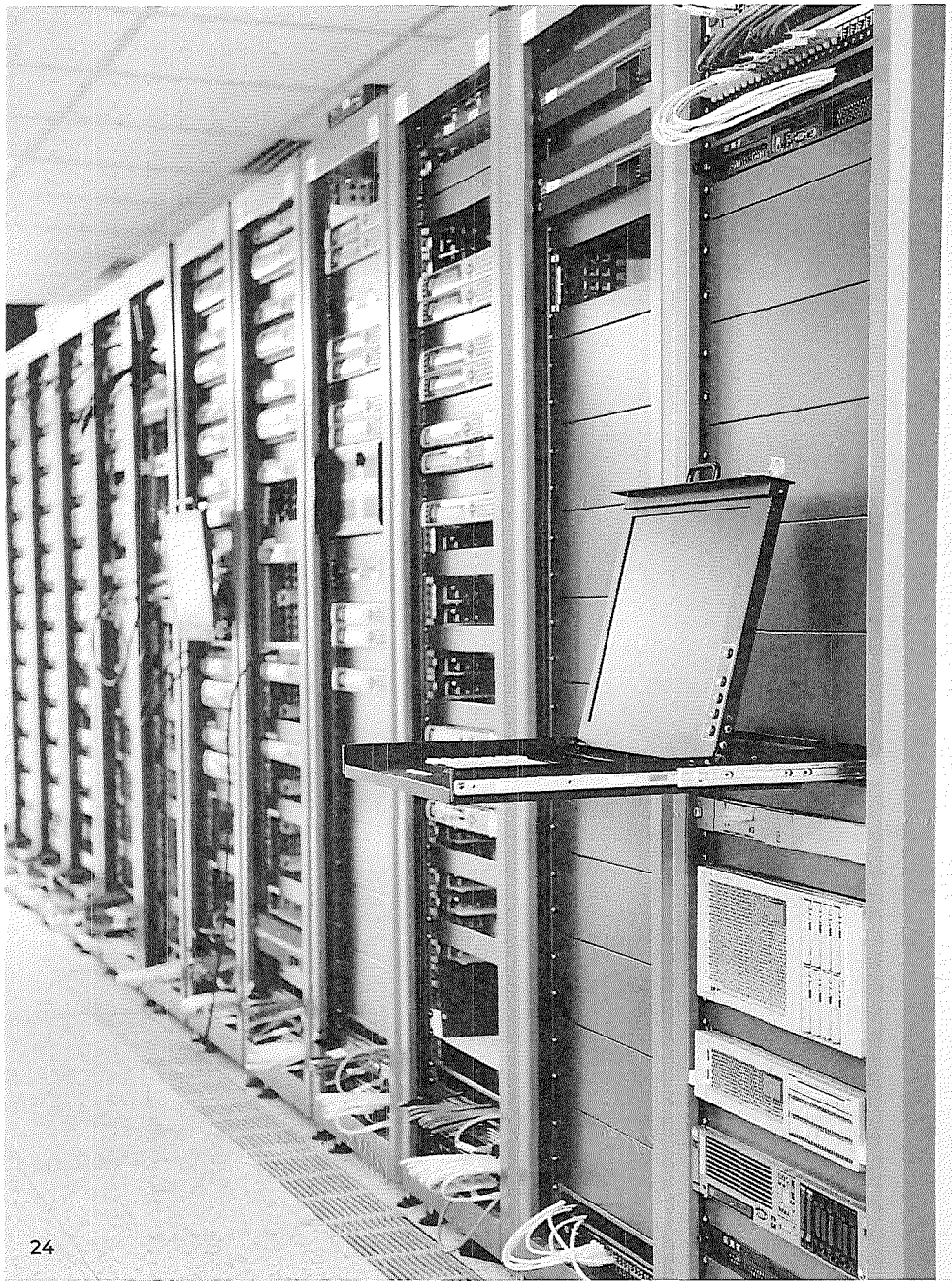
The Front Door should continue to provide technical expertise in the creation of legislation and permit frameworks. In particular, policies around equity, accessibility, privacy, data ethics, and data sharing should be a collaborative effort that draws on lessons from the testing phase.

Major Deliverables:

- The Front Door should share the results of the testing phase to an interdepartmental permitting group, and **make recommendations if a permit should be created and issued. The Front Door will also identify which Department is the best permitting authority** and work with this permitting authority to make findings available at a relevant public hearing.
- In consultation with the companies and permitting authority, the Front Door should help **determine realistic and helpful data sharing requirements for compliance and enforcement.**
- The Front Door should continue to act as a **community liaison to facilitate communication** between companies and neighborhood groups to share results of temporary testing permit and next steps.
- The Front Door should help **share legislation templates** with other cities and across the region to support each other's legislation and standards.

Proposed Emerging Technology Permitting Model

	Discovery	Pilot Application/MOU	Pilot Evaluation	Legislation / Permission	Ongoing Evaluation
User Steps	◆ Company identifies market opportunity in SF with a new technology ◆ Approaches the "Emerging Tech Front Door" for information to pilot ◆ Conducts early community outreach	◆ Define business model ◆ Negotiate terms of pilot and data sharing rules ◆ Ongoing community engagement & user testing	◆ Present impact evaluation metrics in community forums ◆ Collect equity, accessibility, cybersecurity, privacy data	◆ Provide additional information as needed for BOS and permitting departments ◆ Continue community outreach	◆ Company scales business model to entire City, or as permit requires ◆ Company shares data as needed
City Steps	◆ Confirmation this is an emerging technology and level of scale worth engaging with ◆ Front Door identifies permitting authorities ◆ Provides information on ET pilot & permitting process ◆ Analyze evidence of impact in other cities ◆ Evaluate whether limited pilot in SF is warranted ◆ Draft pilot design and identify benchmark criteria for impact analysis	◆ Assemble evaluation steering committee ◆ Develop pilot terms & conditions (time, place, manner) ◆ Identify ultimate permit authority ◆ Identify what data the company must collect versus the City collects ◆ Issue pilot MOU	◆ Field observations ◆ Conduct equity, accessibility, cybersecurity, privacy assessment ◆ Make go/no go decision to get a permit ◆ If go, hand-off legislative & permitting process to permitting agency ◆ If no go, pilot stops	◆ Once legislation passes, create permit terms & conditions ◆ Issue permit	◆ Permitting department conducts periodic reviews and inspections ◆ If additional permit requirements added that existing agency does not have capacity to oversee, Emerging Tech Front Door to take responsibility
Agencies	**Lead:** Emerging Tech Front Door	**Lead:** Emerging Tech Front Door **Support:** Relevant Permitting Agencies	**Lead:** Emerging Tech Front Door **Support:** Relevant Permitting Agencies	**Lead:** Governing Permitting Agency **Conditional:** Emerging Tech Front Door	**Lead:** Governing Permitting Agency **Conditional:** Emerging Tech Front Door



Recommendation 5:
Smart Forecasting through Expert Collaboration

Technology is constantly changing and government is challenged to keep up with the opportunities and impacts of technology. The City needs to improve its capacity to forecast new technologies and leverage technological expertise to help create coherent and effective policy. San Francisco needs formal collaborative mechanisms to learn and gain expertise to reduce the reactive nature of emerging technology policymaking.

Recommendation: The Front Door should be a leader in creating partnerships with both companies and other cities. Not every technology will be created or initially launched in San Francisco, and we need a mechanism to learn from deployments in other places. In some cases, it may be better to develop an emerging technology in another city before coming to San Francisco.

The Front Door should also help build trust and strengthen relationships with technology companies, government, and community by hosting gatherings and talks about priority issues for our city.

Major Deliverables:

- **Build collaborative partnerships and improve information sharing between cities** to understand impacts and apply lessons learned, building on existing networks. San Francisco should also help establish a **"Bay Area Regulatory Sandbox"** to help encourage information sharing on new technologies. A sandbox will define spaces in cities to test out new ideas in safe environments that minimize negative risks but also understand potential for positive outcomes. Evaluations can be shared across cities and companies to create a regulatory learning environment.
- **Create regular forums** for conversations with companies, investors, and entrepreneurs considering deploying new technologies to engage with stakeholders and build trust.
- **Conduct research and issue Requests for Information (RFIs)** to identify, understand, and assess potential for impact and public benefit of emerging technologies.
- **Convene multi-departmental stakeholders** to review and assess possible impacts and opportunities with upcoming emerging technologies. An important step in spreading awareness of upcoming technologies and coordinating any regulatory efforts.

Long-Term Recommendations

Throughout the Emerging Technology Open Working Group, we heard many other recommendations that would help us succeed. Below are a series of additional recommendations from the Emerging Technology Open Working Group. San Francisco should consider adopting these recommendations over time.

- **Develop Community Outreach Standards:** The manner in which companies and local government interact with residents and neighborhoods varies widely. The City should look to the Fix-It Team and other effective models for community engagement to establish a series of standards. Fix-It Team website: https://sfmayor.org/neighborhoods/fix-it-team

- **Create a Jurisdictional Map of Permitting Authorities:** Navigating San Francisco's permitting process requires interacting with multiple different agencies who all have different steps and requirements. As a first step to streamlining the permitting process, San Francisco should develop a jurisdictional map of all the City's permits and processes.

- **Conduct a Cost Recovery Study on Public Spaces:** Companies that operate their business in public spaces may also be exacting additional cost on infrastructure, which require additional support and maintenance. San Francisco should conduct a cost-recovery study to understand the products that use public infrastructure and recommend a true cost-recovery program.

- **Create a Partner Scorecard that Tracks Company Compliance and Performance:** To help further transparency, San Francisco should create scorecards on permitted companies. This information can be used to help evaluate future applications and work done with the City.

- **Explore Partnership Opportunities where Emerging Mobility Services Support Public Transit:** In some cases, emerging mobility products may be able to support citywide transit goals. The City should explore options to work in partnership with these developing business models.

- **Conduct an Automation and Labor Vulnerability Study:** San Francisco needs to better understand the impact of automation on our labor force. The City should leverage research currently being conducted by the Office of Economic and Workforce Development to analyze new technologies and their labor impact.

- **Equity Impact Assessment:** San Francisco should consider conducting equity assessments to evaluate the impact of new technologies. Technology has the potential to both expand and shrink societal inequalities. The City should be deliberate in its policies and pilots to address equity issues.

- **Support a Equity Technology Fund to Help Lower Income Residents, especially those with Disabilities:** New technologies have the potential to transform our lives, especially those with disabilities or underserved populations. A dedicated fund to help populations in need with accessible and adaptive technologies.

- **Incentivize and Promote Apprenticeship Programs:** The next generation of jobs will require technology expertise. San Francisco should continue to incentivize apprenticeship programs with local technology companies to help train the next generation.

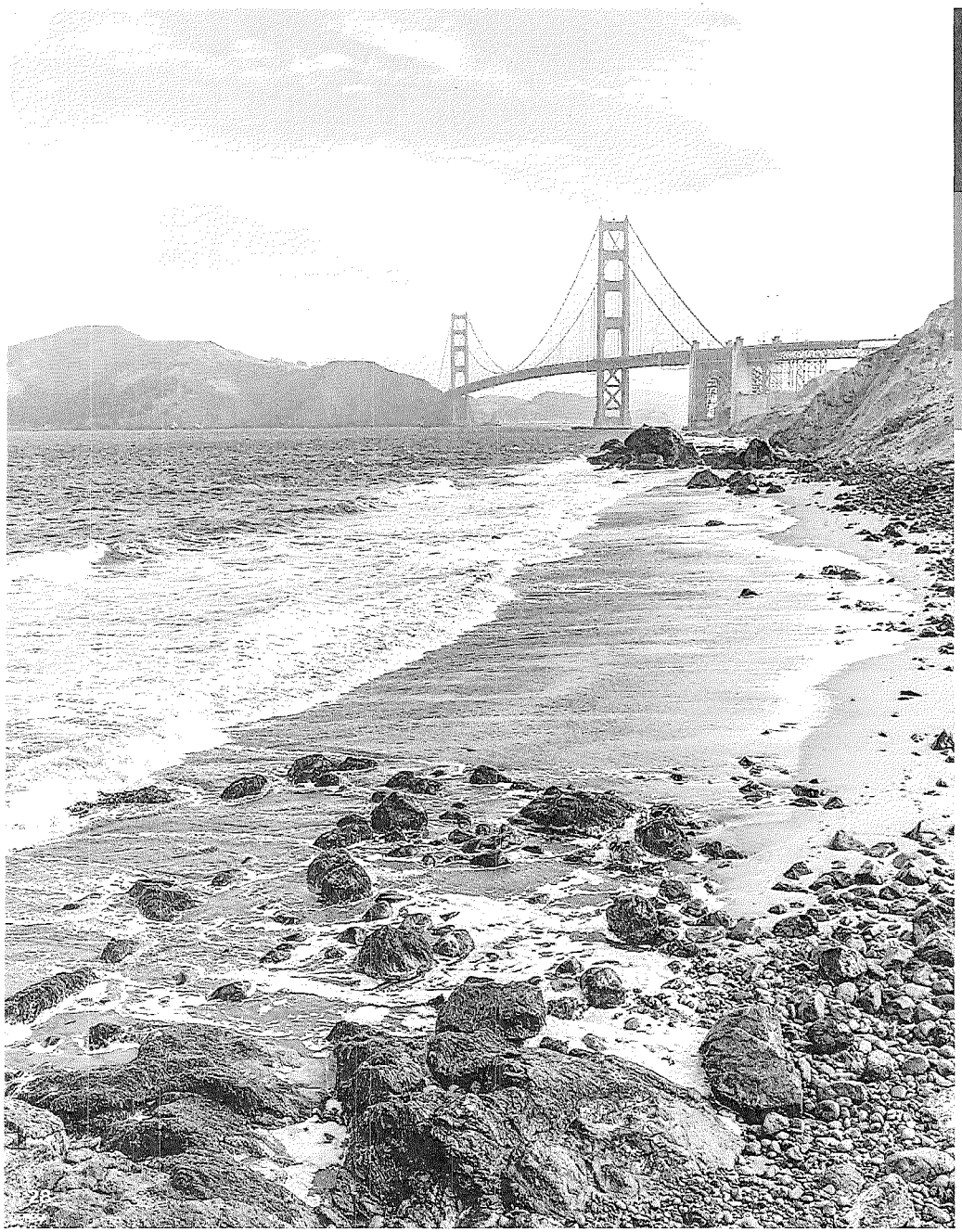
- **Incentivize Hiring Policies that Encourage Diversity:** San Francisco should help encourage technology companies to become more diverse. Through incentives and procurements, the City can help bring in new voices to the technology community.

- **Investigate a Third-Party Data Collaborative:** Sharing data between government and companies can be difficult as proprietary interests and transparency goals sometimes conflict and there is a lack of trust amongst partners. San Francisco should explore a third-party partnership to steward data sharing amongst regional partners and local companies. This collaborative would include considerations of governance as well as technology to support a high trust exchange of data among partners.

- **Hire an Ethical Data Use Officer:** Data privacy continues to be the emerging policy issue regarding technology. However, local government also has an imperative around transparency. Balancing these interests will require a new framework of thinking about the ethical use of data. San Francisco needs clear leadership and guidance to shape the ethical use of data both inside and outside of government.

- **Establish An Ethical Data Use Advisory Council:** To establish a governance framework for data sharing, cybersecurity, and privacy with companies operating in public spaces.

- **Explore Creating a Council of the Future:** San Francisco should consider creating a public-private committee to discuss the next generation of technologies. By having a public discussion with experts on new and emerging technologies, the City can better prepare for the next big thing.



Measuring Our Progress

To reach our vision of a City that embraces technology to enhance quality of life and our public spaces, we'll need to make a lot of changes.

Measuring our progress will allow us to track if we are making the right kind of changes that will help us achieve our vision. The following are a few criteria that we will use to measure our progress.

Initiating Connection & Foresight: The City has the capacity to forecast emerging technologies, while also providing a transparent engagement process.

- Does the community have a place to discuss or bring up a concern about a new technology?
- Do companies know who to talk to and where to go in the City?

Working with the City: The City communicates its priorities and needs while also providing guidance to companies on how best to operate.

- Is there a one-stop shop to understand City priorities and talk to staff?

Testing in the City: The City provides opportunities and guidelines for companies to test their technologies which can also better incorporate community input.

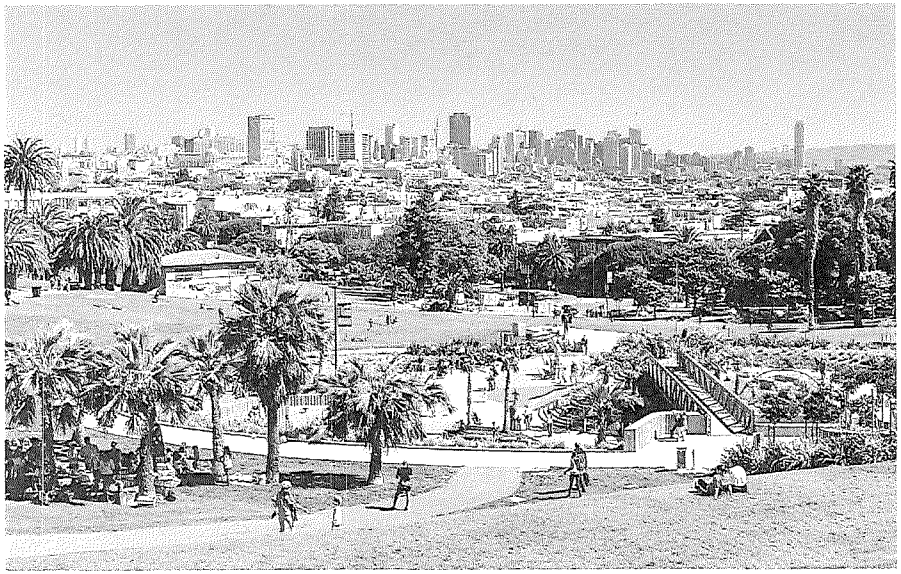
- Are residents aware and engaged in tests in their neighborhoods?
- Do companies have the ability to demonstrate how their product can operate safely and in an inclusive manner in San Francisco?
- Does testing help make technology products more accessible and inclusive?
- Has testing helped anticipate risks and prevent harm?

Formalizing Operations: San Francisco should keep pace with emerging technologies to appropriately regulate and permit their products.

- Are regulations able to adapt to emerging technologies?
- Is the permitting process certain and predictable?

Deepen Engagement and Community Partnerships: Emerging technologies should benefit communities of concern and reduce the digital divide.

- Is the City partnering with technology companies to solve urban challenges faced by all residents, especially those in the community of concern?



Conclusion

When a new technology company launches in San Francisco, it is joining our community. With so many technology companies in our backyard, San Francisco has a unique opportunity to collaborate with the technology sector to develop shared values of innovation for the public good. Creating a Front Door to technology companies can help San Francisco better prepare for the future. Through better communication and shared expectations, we can create a community we all enjoy living in.

Appendix A: Glossary of Terms

The Emerging Technology Open Working Group helped the City realize that a lot of the terminology that technologists and government use is hard to understand. This glossary is intended to help translate some of the common terms used between government, community, and technology.

Accessibility	Easily used or accessed. This includes enabling access for people with disabilities.
Adaptive Technology	Name for products which help people who cannot use regular versions of products, primarily people with disabilities.
Section 508 of the Rehabilitation Act	A federal law that requires federal agencies to make their electronic and information technology accessible to people with disabilities.
Agile	Agile software development is an approach to software development. It advocates adaptive planning, evolutionary development, early delivery, and continual improvement, and it encourages rapid and flexible response to change.
Algorithm	A sequence of instructions telling an application what to do.
Americans with Disabilities Act	A federal civil rights law that prohibits discrimination based on disability. It requires that state & local governments, and public accommodations ensure effective communication with individuals with disabilities, including equal access to services or information.
Artificial Intelligence	Computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.
Assistive Technology	Any item, piece of equipment, or product system that is used to increase, maintain, or improve functional capabilities of individuals with disabilities.

Augmented Reality	A technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view.
Autonomous Delivery Robots	A technology service that uses robots to deliver products from point A to point B without direct human navigation.
Biometrics	An evolving form of authentication that uses distinctive, measurable characteristics used to identify an individual.
Blockchain	A blockchain is a decentralized, distributed and public digital ledger that is used to record transactions across many computers so that any involved record cannot be altered retroactively, without the alteration of all subsequent blocks.
Board of Supervisors	The legislative branch of the City and County of San Francisco. The Board consists of 11 members. Each member is elected on a non-partisan basis from a district where he or she lives.
Cease & Desist	A document sent to an individual or business to stop purportedly illegal activity ("cease") and not to restart it ("desist").
Communities of Concern	The definition of "communities of concern" is intended to represent a diverse cross-section of populations and communities that could be considered disadvantaged or vulnerable in terms of both current conditions and potential impacts of future growth.
Community Engagement	A dynamic relational process that facilitates communication, interaction, involvement, and exchange between an organization and a community for a range of social and organizational outcomes.

Data Ethics Refers to systemizing, defending, and recommending concepts of right and wrong conduct in relation to data, in particular personal data.

Deaf A particular group of deaf people who share a language – sign language and a culture.

Digital Divide The gulf between those who have access to digital technologies and the skills to use them effectively, and those who do not.

Digital Economy Refers to an economy that is based on digital computing technologies, although we increasingly perceive this as conducting business through markets based on the internet.

Digital Equity Full and equal access to technology and its benefits for all people, regardless of demographics, with additional support for those who need it most.

Director's Order Public Works Orders represent formal and official acts of the Department. For example, there are Orders that recommend that the Board of Supervisors approve something within Public Works' jurisdiction, Orders that announce Public Works/Administrative hearing officer hearings or decisions, and Orders that adopt Public Works regulations implementing various programs or laws, among other actions.

Disability In California disabilities are broadly defined as conditions that limit a major life activity, including physical and mental disabilities, as well as medical conditions such as cancer or HIV/AIDS. California wdefinitions and protections can be broader than protections under federal law.

Drones A drone is a flying robot that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, working in conjunction with onboard sensors and GPS. Drones are more formally known as unmanned aerial vehicles (UAV) or unmanned aircraft systems (UAS).

Emerging Mobility Emerging Mobility Service or Technology is one that automates three or more of the following services:

- Driving
- Routing
- Reservations/orders
- Vehicle tracking
- Billing
- Customer feedback
- Matching/sharing
- Crowd-sourced routing
- (Un)locking

Examples of Emerging Mobility Services and Technologies include ride-hail services, autonomous vehicles, bike share, and ride-pooling services.

Emerging Technology Technologies that are perceived as capable of changing the status quo. These technologies are generally new but include older technologies that are still controversial and relatively undeveloped in potential.

Ethical Algorithm Government leaders and staff who leverage algorithms are facing increasing pressure from the public to better understand the implications of using an algorithm, and be able to clearly articulate the potential risks and identify ways to mitigate them.

Facial Recognition A biometric application that identifies or verifies a person by comparing and analyzing patterns based on the person's facial contours.

Jurisdiction The official authority granted to a legal body to administer justice within a defined field of responsibility, e.g., California tax law. In federations like the United States, areas of jurisdiction apply to local, state, and federal levels.

Limited English Proficient (LEP) Individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English can be limited English proficient, or "LEP." These individuals may be entitled language assistance with respect to a particular type or service, benefit, or encounter.

Low-Income Low-income is considered twice the level of the federal poverty level. The official poverty thresholds do not vary geographically, but they are updated for inflation.

Machine Learning Machine learning is an application of artificial intelligence that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

Ordinance/Resolution A piece of legislation enacted by a municipal authority.

Personal Identifiable Information (PII) Information that can be used on its own or with other information to identify, contact, or locate a single person, or to identify an individual in context.

Pilot Also called a feasibility study or experimental trial, is a small-scale, short-term experiment that helps an organization learn how a large-scale project might work in practice.

Public Domain The state of belonging or being available to the public as a whole, and therefore not subject to copyright. Public domain refers to all the creative works to which no exclusive intellectual property rights apply. Those rights may have expired, been forfeited, expressly waived, or may be inapplicable.

Public Health Public health promotes and protects the health of people and the communities where they live, learn, work and play. While a doctor treats people who are sick, public health workers try to prevent people from getting sick or injured in the first place.

Public Right of Way Type of easement granted or reserved over the land for transportation purposes, this can be for a highway, public footpath, rail transport, canal, as well as electrical transmission lines, oil and gas pipelines. A right-of-way can be used to build a bike trail.

Public Space, Public Realm The space around, between and within buildings that are publicly accessible, including streets, squares, parks and open spaces. These areas and settings support or facilitate public life and social interaction.

Request for Information (RFI) Request for Information is a standard business process whose purpose is to collect written information about the capabilities of various suppliers. An RFI is primarily used to gather information to help make a decision on what steps to take next. Normally it follows a format that can be used for comparative purposes.

Request for Proposal (RFP) A request for proposal is a document that solicits a proposal, often made through a bidding process, by an agency or company interested in procurement of a commodity, service, or valuable asset, to potential suppliers.

Robotic Process Automation Robotic process automation (or RPA) is an emerging form of business process automation technology based on the notion of software robots or artificial intelligence workers.

Sandbox A sandbox is a testing environment that isolates untested code changes and outright experimentation from the production environment or repository.

SF Digital Service Is a team within the City that works with other City departments to improve public services through technology. The team is re-building the City's website and is re-thinking how public services are designed, by understanding what users need.

Sunshine Ordinance It is an ordinance to insure easier access to public records and to strengthen the open meeting laws. The Sunshine Ordinance also outlines a procedure for citizens to follow if they do not receive public records they have requested.

Transgender Denoting or relating to a person whose sense of personal identity and gender does not correspond with their birth sex.

Transportation Network Company An organization that pairs passengers via websites and mobile apps with drivers who provide such services. Transportation network companies are examples of the sharing economy and shared mobility. Sometimes known as a mobility service provider (MSP) or ride-hailing service. Uber and Lyft are prominent examples.

Universal Design An approach that ensures complete user experience, inclusive of people with disabilities and all users in mind. This approach can be applied to any product, whether that be a building, service or tool, solutions designed using this approach serves not only the needs of a single minority group, but creates an environment that is accessible and convenient for all. Universal Design is based on these 7 Principles:

1) Equitable Use - The design is useful and marketable to people with diverse abilities.

2) Flexibility in Use - The design accommodates a wide range of individual preferences and abilities.

3) Simple and Intuitive Use - Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills or current concentration level.

4) Perceptible Information - The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

5) Tolerance for Error - The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6) Low Physical Effort - The design can be used efficiently and comfortably and with a minimum of fatigue.

7) Size and Space for Approach and Use - Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Usability Testing Usability testing is a technique used in user-centered interaction design to evaluate a product by testing it on users. This can be seen as an irreplaceable usability practice, since it gives direct input on how real users use the system.

Virtual Reality The computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.

Vision Zero SF Vision Zero SF is the City's road safety policy that builds safety and livability into the streets, protecting the one million people who move about the City every day. The City and County of San Francisco adopted Vision Zero as a policy in 2014, committing to build better and safer streets, educate the public on traffic safety, enforce traffic laws, and adopt policy changes that save lives. The goal is to create a culture that prioritizes traffic safety and to ensure that mistakes on our roadways don't result in serious injuries or death. The result of this collaborative, citywide effort will be safer, more livable streets as we work to eliminate traffic fatalities by 2024.

Voluntary Product Accessibility Template (VPAT) A self-assessment document completed by a vendor that provides relevant information on how their product or service claims to conform to Accessibility Standards.

Waterfall The waterfall model is a relatively linear sequential design approach for certain areas of engineering design. In software development, it tends to be among the less iterative and flexible approaches, as progress flows in largely one direction ("downwards" like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, deployment and maintenance.

World Wide Web Consortium (W3C) standards The World Wide Web Consortium (W3C) develops international standards for the Web: HTML, CSS, and many more. It includes the Web Content Accessibility Guidelines (WCAG) 2.0 and 2.1 which explains how to make web content and applications more accessible to people with disabilities.

Appendix B: Emerging Mobility Recommendations

In 2018, the San Francisco Transportation Commission adopted the Emerging Mobility Evaluation Report which looked at a variety of new technology companies launching products on San Francisco streets and sidewalks. Contained within the report is also series of recommendations which are shared below.

The Emerging Technology Open Working Group continued to build from the work conducted by the San Francisco County Transportation Authority and San Francisco Municipal Transportation Agency. Our hope is that both the recommendations by the City Administrator and the Emerging Mobility Report will be considered jointly when discussing the future of new technologies in San Francisco.

For the full report, please go to: https://www.sfcta.org/emerging-mobility/studies

Recommendation 1:
Proactively Partner

The SFMTA and the San Francisco Municipal Transportation Agency should develop a framework for emerging mobility pilots that considers this study's evaluation results and encourages the city to proactively partner with companies to develop innovative solutions to address unmet city transportation needs. This framework should consider partnerships with transportation companies, employers, developers, and civic and neighborhood organizations.

- Develop a Framework for Emerging Mobility Pilots
- Establish a Public-Private Emerging Mobility Task Force
- Pilot Mobility as a Service Application

Recommendation 2:
Collect Emerging Mobility Data and Conduct Research

San Francisco public agencies should develop a data reporting and warehouse strategy to coordinate and consolidate existing data streams. Additionally, the city should employ a travel decision study to understand travel behavior. Such a study could be combined with a mobile application pilot that studies traveler choices and factors that inform them.

- Develop a Data Reporting and Data Warehouse Strategy
- Conduct a Travel Decision and Behavior Study
- Pilot a 3rd Party Data Collaborative

Recommendation 3:
Regulate and Recover Costs

The SFMTA should harmonize existing permit programs related to emerging mobility and create a framework for new services. The emerging mobility permit program should administer a permit fee that considers the full cost to plan for and regulate these services. Similarly, the city should seek regulatory and/or impact fees to mitigate effects these services have on safety, city resources and investments, as warranted by research studies. The permit must also require a standard set of data necessary to conduct ongoing evaluation of these services and include standards for equitable provision of services to underserved areas and to people with disabilities.

- Harmonize existing permits and develop emerging mobility service permit framework
- Develop and Implement Emerging Mobility Impact Fee
- On-Street Shared Vehicle Parking Permit Program
- Develop and Implement an Emerging Mobility Business Tax

Recommendation 4:
Bridge Mobility and Access Gaps

The city should develop a user study to more clearly understand who uses emerging mobility services and for what purposes. This study should focus on equity gaps for low-income users and issues related to disabled access. The SFMTA and the Transportation Authority should also develop pilots to fill mobility and access gaps, such as for on-demand accessible services, late night transportation, school-related transportation, and in areas less well-covered by public transit.

- Reduce Barriers to Access
- Conduct an Equity and Disabled Access Study
- Pilot Late Night Transportation Options

Recommendation 5:
Support Public Transit and Prioritize Transit

The Transportation Authority and the SFMTA should continue to support the expansion of transit-priority facilities and methods to make transit service more competitive. The Transportation Authority and the SFMTA should collaborate in developing a series of studies related to rights-of-way prioritization, vehicle miles traveled, financial impacts, and cost-recovery. To support these studies, the Transportation Authority and the SFMTA should conduct pilot programs that improve first and last mile connectivity to transit stations.

- Continue to Support Expansion of Transit-Priority Treatments
- Conduct a Customer experience study
- Conduct a Right-of-Way Prioritization Study
- Conduct a Financial Impact Study
- Pilot First and Last Mile Connections to Transit

Recommendation 6:
Enforce Safe Streets

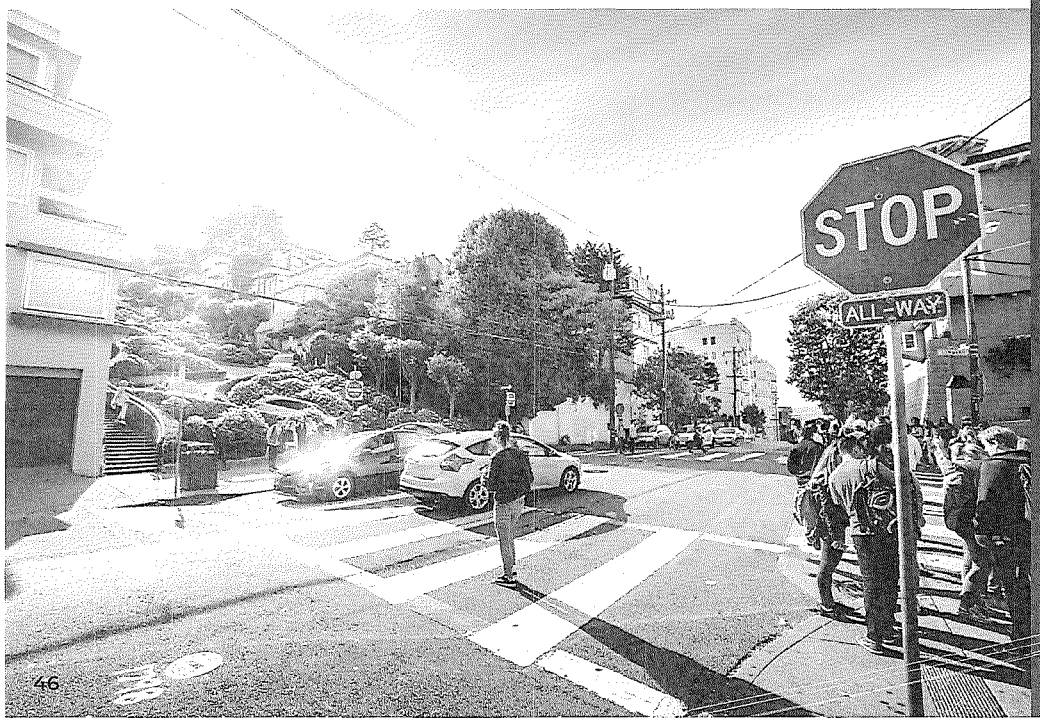
The SFMTA and the Police Department should increase enforcement of known emerging mobility conflict areas throughout the city and consider piloting enforcement blitzes to encourage safe operation. Similarly, they should seek legislative authority and implement a pilot that automates enforcement to promote safety, ensure more systematic adherence to traffic rules, and reduce enforcement costs. The SFMTA should also develop a Vision Zero study that studies collision rate trends and unsafe operations, determines whether there is a correlation with emerging mobility services, and identifies recommendations to reduce traffic fatalities.

- Conduct an Emerging Mobility and Vision Zero Study
- Increase enforcement of traffic rules and hours of service

Recommendation 7:
Manage Congestion at Curbs and on City Roadways

The SFMTA and the Transportation Authority should prioritize developing a curb management strategy that allocates and prices curb access appropriately. Such a strategy should be supported by curb management pilots with emerging mobility services and through a curb management prioritization study. The SFMTA should also develop and implement an emerging mobility streets design guide to reduce modal conflicts. Finally, based on current congestion levels on San Francisco roadways, San Francisco should move toward implementing a decongestion pricing and incentives system, whether through cordons or roadway user fees, to manage roadway congestion.

- Move towards implementation of a Decongestion Pricing and Incentives Program
- Develop a Curb Management Strategy
- Produce a New Mobility Street Design Guide



Appendix C: Staff Report - General Research Findings

In June 2018, the Emerging Technology Staff Advisory Team began interviewing experts and researching emerging technology in other cities. In all, the team conducted 59 interviews, researched 28 cities and other organizations, and had dozens of other interactions. The team also surveyed 80 participants who attended our first two Emerging Technology Open Working Group listening sessions on July 9 and July 23.

Who we interviewed	Listening Session Attendees
• **13** Community Groups • **7** Non-Profits • **17** Private Sector • **12** City Staff • **10** Government • Researched **28** Cities	• **57** Nonprofits • **51** Community Members • **29** Small Businesses and Industry • **22** Private Sector • **37** City staff

From this research, our team identified the parameters for the definition of emerging technology. We then used survey feedback to select guiding principles and identify City goals for emerging technology. Finally, we identify potential benefits and challenges associated with emerging technology as well as an initial list of recommendations.

The following notes reflect the Emerging Technology Staff Advisory Team notes upon the conclusion of the research phase in August 2018.

Definition of Emerging Technology

From City's perspective, emerging technologies include:

1. technologies,
2. applications of technology, and/or
3. business models

which:

A. are in development and have only been tested at market level on a limited basis;

B. The city identifies a public interest in governing because they are expected to have a measurable impact economically, socially, or ethically in the next five to ten years; and/or,

C. Do not fit within existing regulatory categories or schemes within San Francisco.

The first part of the definition captures how technology advances. For example, widespread connectivity has led to the creation of new technologies as well as novel business models. The second part of the definition identifies when the City wants to be involved: early on. Local government needs to be involved when the public is likely to be impacted and when the technology cannot be easily regulated within the City's existing model.

Guiding Principles

We asked survey participants from our Emerging Technology Open Working Group listening sessions to choose which principals they believed were most critical for the successful implementation of emerging technologies. The top ten results include:

1. Accessibility
2. Equity
3. Public Value
4. Regulation that is nimble and responsive
5. Net common good
6. Accountability
7. Collaboration
8. Public safety
9. Security
10. Sustainability

Going through the results in more detail, we also identified five major themes from the responses:

1. **Quality of life.** Respondents believed a primary goal for emerging technology should be improving the quality of life for residents. This includes increased public safety, justice, prosperity, and livability.
2. **Public-private relationships.** Respondents believed strong public-private partnerships were important for enhancing safety and providing equal services to all residents. Respondents described a responsive City framework that is not over burdensome and that fosters and promotes innovation.
3. **Equity.** Respondents wanted to create a technology ecosystem in San Francisco that delivers an equitable distribution of the benefits of technology across all residents.
4. **Innovation Leadership.** Respondents were well-aware of San Francisco's leadership as a center of innovation. They believed the best way to maintain this title is with a City leadership that is balanced and informed. City leadership should also allow the public to drive the process on technology decisions.
5. **Informed Community.** Respondents focused on the need for informed, connected, and supported communities that understand and benefit from the opportunity brings, especially with regard to a higher quality of life.

How can emerging technology benefit San Francisco?

City leaders throughout the world, subject matter experts, industry members, and community groups all provided explanations of how new emerging technologies might improve quality of life in San Francisco. Our survey participants also are enthusiastic about the potential of emerging technology. When asked in a survey whether technology can have a positive impact on their community, all 60 respondents rated at least a four on a scale from one to seven (seven being a very positive impact on the City). Even more encouraging, 78% of respondents rated a six or seven.

The benefits identified from our research and survey responses include:

- bolstering quality of life for residents,
- improving City functions, and
- increasing engagement between residents and City government.

These benefits ranged from concrete examples in other cities to more theoretical future benefits. Many caveated these benefits with potential tradeoffs, risks, and other considerations, which we focus on in the next section.

Participants suggested that new technologies can be used to improve equity and safety for residents, encourage creativity and sustainability, and foster community. For example, new technologies might help the City ameliorate food deserts, improve mobility for residents with disabilities, or reduce carbon emissions. Technology could also be leveraged to connect artists for public works projects or provide tools for communities to organize and problem-solve.

Participants believed that new technologies might also be used to help the City run more efficiently. Technologies might help city planners and businesses understand trends to make informed decisions, including understanding and tracking displacement. Emerging technology could also bring a more agile and adaptive approach to the way City services are delivered. Technologies might also help the City advance priorities by reducing costs and creating new revenue streams. Additionally, technology has the potential to streamline bureaucracy, allow the City to respond to citizen demands more quickly, and improve coordination among services.

Respondents also described ways emerging technology could improve engagement between residents and the City. For example, technology might democratize services, allowing residents to understand City functions and improving transparency and accountability. Technology might make civic duties easier, like voting. Technology also might allow residents to engage with public spaces in new ways.

Potential Challenges of Emerging Technology

In addition to identifying opportunities that technology presents for San Francisco, participants shared concerns about obstacles that could prevent the city from realizing its goals. Broadly, concerns can be sorted into three buckets, relating to concerns about the:

- public sector's role
- technology itself
- intersection of City government, technology, and the community

On the government side, some participants are concerned about the City's politics as well as its ability to be nimble, not overregulate, and to use data to make informed decisions. Participants worried that political calculations, special interests, and/or a lack of strong leadership might impede the successful implementation of emerging technology. Respondents also believed bureaucracy, including government silos and the instinct for rigid governance that is then interpreted differently within government are two barriers to creating an effective framework for emerging technology. Also highlighted are questions around whether the City can leverage data to identify problems and find solutions.

On the technology side, some participants responded that they were fearful of technology, while others focused on the potential for bad actors or issues of privacy, security, and safety. Participants voiced concern that companies might focus too narrowly on profits without mitigating unintended consequences of their products and services, leading to subpar privacy and security.

Participants also had broad concerns at the intersection of government, technology, and the community. This includes poor communication between and different pacing of government and technology companies, lack of accountability, and misaligned incentives between (and within) sectors. Participants also worried about a lack of awareness and outreach to communities and had limited faith that emerging technology would be used to target problems that are important to the community.

Potential Recommendations

The Working Group's initial research was focused on information gathering from experts and understanding the aspirations and concerns from advocacy organizations and communities. Along the way, experts and participants included recommendations to consider as the Emerging Technology Open Working Group moved forward. Below are some suggested recommendations, grouped by topic.

Big Picture recommendations:

- **Create a vision and goals.** Create a vision and series of goals for emerging technology companies to respond to when they're seeking to work in San Francisco.
- **Build a city network.** Convene a network of cities to encourage testing in small and mid-size cities that can inform governance across cities and provide paths for technologies to scale
- **Reinforce good behavior.** Find opportunities to praise and support PR for companies that enhance city values or goals

Regulatory recommendations:

- **Create a single "front door" with one point of contact in the City.** This could include a simple checklist that provides guidance on what companies can and cannot do and a mechanism to guide companies through the process and tell them who they need to talk to. This system should be designed to incentivize companies to engage with the City.
- **Experiment.** Use experimentation as a principle, and have a streamlined process for experimentation. One way to do this without fixing the market is to create testbeds, like FAA is doing with drones. Demonstration projects allow the city to have a standardized way to pilot new technologies.
- **Use outcomes oriented compliance.** Create a performance based system that says what the City seeks but not how companies have to get there for regulatory standards. For instance, define "this is what it means to be safe" and require companies to show how they can meet that standard.
- **Iterate.** Regulate adaptively and have a multi-step regulatory process. This relies on continuous monitoring to keep track of concerns, find problems, and propose and implement minimal regulations to solve them.
- **Give time to small companies.** Provide small and early stage companies with time to comply with new regulations in a way that doesn't put them out of business.

Equity and Accessibility recommendations:

- **Rely on community advocates.** Work with trusted organizations to reach vulnerable populations and train them to train residents on how to use new services
- **Use purchasing power.** Use government purchasing as an incentive to make products **accessible**
- **Find ways to engage affected communities.** Create a channel for people who haven't been able to participate or who have been disadvantaged through technology to open a channel of conversation. Do not try to work on these problems without having people who are affected by the problem there.

Data and privacy recommendations

- **Work with outside organizations for data analysis.** The City could pilot a partnership with a 3rd party (e.g. a university) to disaggregate and analyze data and create reports for the City.
- **Ensure interoperability.** The City should ensure data interoperability so more than 1-2 companies can emerge.
- **Don't reuse data.** Data gathered for one purpose shouldn't be reused for another purpose without checking in with the data source.
- **Require data collection transparency.** Regulate that companies provide transparency around what's going to happen with the data they collect
- **Require data deletion standards.** Ensure that companies do not store data for longer than is needed for the reason it was collected.

Forecasting recommendations:

- **Coordinate with communities with insider knowledge.** Coordinate with external communities like the World Economic Forum and the Venture Capital community
- **Balance between experts and private sector.** Recognize that experts are much better at predicting new technologies than business models that will be successful, while the private sector is better at identifying business models
- **Forecast for the largest number of possibilities.** Identify a wide set of probable futures - rather than a single, most probable one - and develop a strategy that will handle the largest number of possibilities (not necessarily the most probable possibility).
- **Use patent trends.** Review patent trends to understand how companies are thinking about the future

Conclusion

Our conversations with experts and our community provided the City with a solid foundation for approaching a framework for emerging technology. This process helped us temperature check how communities feel about emerging technology and where and how people thought the City should leverage new technologies. It also allowed us to check any blind spots we might have, identify what people believed to be major pain points, and clarify areas for further research.

Appendix D: Staff Report - Learning from our Friends

As part of our research phase, City staff analyzed how other cities and jurisdictions are handling the introduction of new technologies. The following report describes our findings from other cities.

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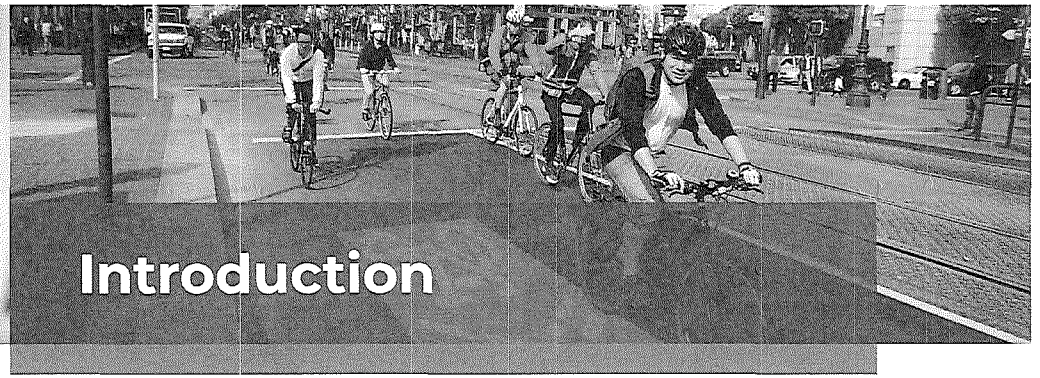
Key Takeaways

Talking to cities about their approach to emerging technology led us to some incredible insights, best practices, and aspirations. We would like to ground our report with these takeaways as they can help guide San Francisco's policy-making efforts:

- **Articulate meaningful city goals to help companies communicate how they can help.** Cities and companies may have different goals, but they are not necessarily in conflict. Cities had an easier time working with companies when they had clear goals they wanted to achieve and they communicated them well. This means defining what it means to "advance equity" or "make technology accessible."
- **Having an easy way to pilot new technologies is crucial.** We heard over and over again about the importance of testing a technology in one's own city before full-scale deployment and creating a nimble mechanism (like demonstration projects) to establish a pilot quickly. Cities described that use-cases of a technology in other cities was a good starting place. However, cities are sufficiently different in culture, demographics, politics, etc., meaning that learning from others cannot replace testing out the technology in one's own backyard. Many cities aspire to be "beta" cities or "testbeds."
- **There will always be cases where cities need to be reactive, but proactive projects have the best results.** This one is obvious, but important. Cities are in different stages of proactive problem solving with technology. However, most describe better control over projects when they are proactive projects, rather than reactive ones. Being forward thinking leads to better collaboration with companies as well.
- **Technology might be use-case specific but the government process is not. Use this to your advantage.** Generally, cities thought that new technologies would have quirks and nuances that would require a different permit or pilot. (In some cases, cities tried to make a permit for one technology broad enough to apply potentially to a similar, even more emerging technology [e.g. dockless bike to electric scooters].) However, while the permit might be different, the process would remain similar. Cities spoke aspirationally about creating a standard or streamlined process to permit emerging technologies.
- **It's about people, not technology.** A good working relationship, consistent collaboration, and continuous stakeholder engagement (with both the community and the private sector) were cited as some of the most important factors for the success of a project.



Introduction

In the spring of 2018, the Board of Supervisors passed Resolution 102-18. This resolution urged City Administrator Naomi Kelly to create a working group to inform future legislation on emerging technologies.

From July to December 2018, the City Administrator will convene an Open Working Group made up of a variety of perspectives — including members of the public, City stakeholders, academics, industry, community groups, and advocacy organizations — to inform the City's engagement and governance of emerging technologies. The final recommendations will help the city realize its goal of using technological innovation to improve quality of life for the community while mitigating unintended consequences.

As an initial step, City staff conducted research on cities around the country and the world to understand their tactics for addressing the impact of new technologies. This research is fundamental to explore new and emerging technologies as well as learn about effective implementation models and strategies for promoting equity and engaging our community.

The figure below is a visual description of the steps of the Emerging Technology Open Working Group process. The findings from this research will help inform our final recommendations in December.

Figure 1. Project Journey Overview for the Emerging Technology Open Working Group

	RESEARCH PHASE. *Objective:* Staff advisory team begins work with comparative analysis on other city's approaches to emerging technology. Team conducts interviews with experts to get perspective on problems and solutions.
	LISTENING SESSIONS. *Objective:* Gather information from the public on most important issues in order to identify problems for focus of the remainder of the project.
	NEED IDENTIFICATION. *Objective:* Consolidate feedback and provide a list of major values and issue areas we need to address.
	SUBGROUPS. OBJECTIVE: Subgroups are designed by issue area to establish criteria for success and develop specific recommendations.
	SOLUTIONS DEFINITION. *Objective:* Define what solutions must and must not do. Present and receive feedback on initial recommendations.
	FINAL RECOMMENDATIONS. *Objective:* Final working group meeting to review final recommendations and receive feedback.

From the City's perspective, we define emerging technologies as the new technologies, applications of technology, and business models that:

1. are in development and have only been tested at market level on a limited basis;
2. are expected to have a measurable impact economically, socially, or morally in the next five to ten years; and
3. do not fit within existing regulatory categories or schemes within San Francisco.

It is important to note that emerging technologies are separate but related to "smart city" technology. Generally, we view smart city technology as innovations that cities use to improve services. Adopting smart city technologies has led cities to grapple with how to use data better and try new technologies in a variety of new ways and at different scales.

In contrast, emerging technologies are generally led by private actors and the cities main role has been to provide oversight and regulation. And in the past, regulations have often been reactive.

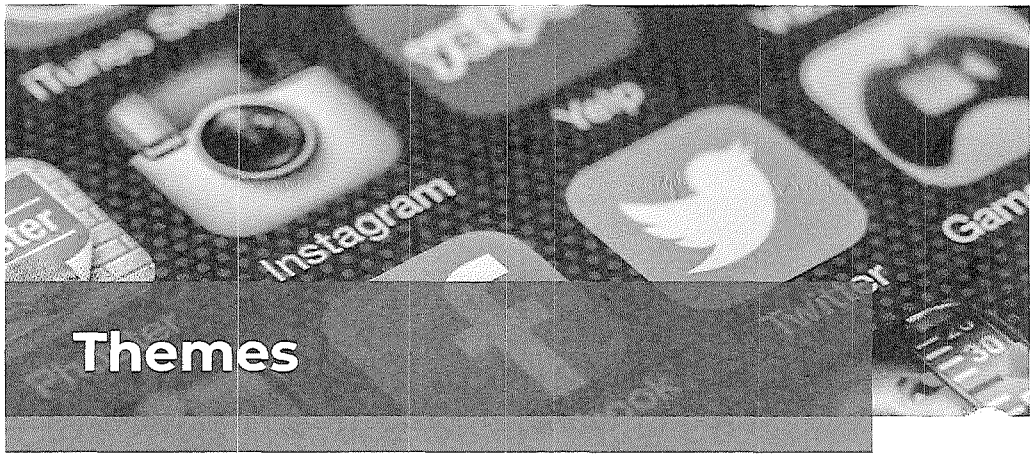
In this report, we look at both emerging and smart city technology because we believe there are lessons that we can learn from "smart city technology" than can inform regulatory approaches. Additionally, we want to highlight the ways in which cities have proactively engaged with smart city technologies to solve problems and innovate since many of the objectives of smart cities overlap with our regulatory goals. In short, there is a lot to learn from smart cities!

This report offers a sampling of technology frameworks and projects from other cities. From our research and conversations with other cities, we identified common issues and priorities, including:

- Clear vision and goals
- Engagement and partnerships
- Digital divide and equity
- Accessibility
- Data sharing
- Privacy
- Enforcement
- Forecasting

Each section features a brief description of the topic and relies on case studies to illustrate how various cities have approached the issue. The report then highlights some topics (such as cybersecurity) that we think merits more consideration and focus.

We hope this research will serve as part reconnaissance and part inspiration. It was designed to get people thinking about the spectrum of responses to emerging technology and how San Francisco might be able to move from a reactionary position to a more proactive, problem-solving one.



Clear Vision And Goals

Cities must have a keen understanding of what they hope to achieve through their use of technology as well as a set of goals to measure progress. This is especially true as the market for emerging and smart city technology grows exponentially. To frame this need, the market for sensors and other WiFi enabled Internet-of-Things (IoT) devices will reach between 4 and 11 trillion dollars annually by 2025. Predictably, cities are increasingly inundated with sales pitches and are struggling to figure out what to adopt.

Without a vision, cities risk getting lost. They might make unsound investments or miss out on opportunities for collaboration with the private sector and communities. City departments might all implement technology without talking to and learning from one another. Instead of leading the dialogue, cities risk being reactionary instead.

A clear vision for the future helps to address this problem. It does not mean cities need to have everything figured out, but rather a vision helps create an approach to technology that is tailored to a given city's needs and values. To that end, there is a broad spectrum of goals and approaches cities have taken to plan for the future. Below are examples from Singapore, Kansas City, and Boston, which illustrate the spectrum of how cities are envisioning the future of their cities.

Singapore and autonomous vehicles

In 2016, the World Economic Forum ranked Singapore as the most "technology-ready" city in the world. This was the result of a concerted effort. The government realized new technology was being implemented across agencies without any higher coordination. This meant there was a fair amount of redundancies and lessons learned were not leveraged across agencies.

As a result, Singapore took deliberate steps to create a vision for the future and assign leadership to make it happen. In Singapore, this took form by creating a central innovation office. With their leadership, they split their focus in two directions: promoting **adoption** of new technologies and creating appropriate **regulation.**

With clear leadership, the innovation team began tackling strategic priorities such as improving transportation in Singapore by reducing reliance on private transportation and increasing use of public transportation. The transportation innovation team worked with the transportation departments to think through how technology could be used to solve problems. An increase in travel demand, a labor shortage, and an aging population led Singapore to look to autonomous vehicles (AV).

Looking to the future, Singapore now has created a five-year testbed for AVs. Officials worked to pass the Road Traffic Act which granted broad authority to the Minister of Transport to create new rules regarding the timeline and scope of AV trials, equipment required, and data sharing standards. The government also worked with Nanyang Technological University to establish the Center for Excellence for Testing and Research of AVs, which would create testing and certification standards. Finally, Singapore built a test park for AVs and released a request for information (RFI) to find AV companies seeking to pilot their technology.

Together these actions created a large and nimble regulatory "sandbox" for AVs which has allowed for the slow integration of AVs from the test park to city streets. This flexibility has led to several pilots, including piloting AV trucks with Toyota and Scania, AV public buses with ST Kinetics, and AV cars with A*Star, nuTomony, Delphi, and Smart. Singapore is now looking ahead to integrating their AV pilots with vehicle-to-vehicle and vehicle-to-infrastructure communication technologies. At the end of the five year sandbox regulation period, Singapore will evaluate the pilot to determine if it should either enact more permanent legislation or extend the testing period.

Kansas City and its Comprehensive Smart City Partnership

In June 2018 the City Council of Kansas City, Missouri unanimously authorised the City Administrator to release a request for proposals (RFP) for a Comprehensive Smart City Partnership. In the RFP, Kansas City states their vision of becoming the "first true smart city in the world," by building on past initiatives and partnering with a private sector firm to design and build "a fully integrated suite of sensors, networks, and data and analytics platforms."

Kansas City began their smart city initiatives in 2016 after Google Fiber chose the City to be the first metropolitan area to get high speed Internet access. The City underwent a major revitalization project with the creation of a new, free streetcar through downtown Kansas City and took the opportunity to make the area more connected through a partnership with Cisco. Initiatives include free WiFI (provided by Cisco and Sprint), smart kiosks that provide way-finding and hyperlocal advertising, and smart streetlights that dim and brighten as needed.

The 2018 RFP builds on this progress and is the first of its kind in duration and scope. The partnership will begin after the City's five year contract with Cisco ends and last between 10 and 30 years. The new partner will be responsible for maintenance of the Cisco system and in exchange for public right of way access and data, the partner will provide capital and build data analysis platforms. Proposals are due on July 31, 2018. Atlanta, Georgia and Columbus, Ohio recently have followed suit and issued similar RFPs.

Boston and its Smart City Playbook

In 2017 Boston, Massachusetts released its Smart City Playbook, a webpage that acknowledges the City is not yet sure what the smart city trend means for Boston, especially in the long-term. The purpose of the playbook is to provide advice to technology companies, researchers, journalists, and activists who want to work with the City as it develops a long-term vision.

Boston's goal is to create a strategy for sensor-technology that is "people-centered, problem-driven, and responsible." The City's core advice to companies is to help Boston grapple with the details and implications of the smart city:

- **Stop sending sales people.** Boston wants to talk to people who know about cities, who have examples of successes and failures in other cities, and who address concerns raised in the playbook.
- **Solve real problems for for real people.** Boston is looking to improve quality of life for its residents. Companies should talk to residents of and advocacy organizations centered in Boston about issues people are facing in the City. Companies must be able to evidence the problem and how their technology helps solve the problem.
- **Don't worship efficiency.** While important, efficiency implies that government knows what it ought to focus on and simply needs to make processes cheaper. Boston wants companies to engage with them not only on cost and efficiency but on what and how to problem solve.

- **Make better decisions, not (just) better data.** A lot of the technologies that are pitched to Boston talk about long-term cost savings from data insights. However, these savings frequently are dependent on behavior or policy change as well, which is difficult to guarantee. The City wants more than potential improvements based on data; it wants partners who have thought about these challenges, concretely and in the context of Boston, and who can help make decision-making easy.
- **Platforms make them go ¯_(☺)_/¯ .** Boston is trying out new technologies on a case by case basis to see what they can learn. The City is not ready for platforms because they do not know what sensors will be used, how they will be networked, where they will be located, or what technical standards will be applied to them.
- **Towards a public privacy policy.** Boston is concerned about the amount of personal identifiable information (PII) that will be collected as the city starts to deploy more sensors and is looking to build an infrastructure that will collect as little data as possible. The City is interested in learning how companies are handling PII, including what they are collecting and what methods are used to anonymize data, as well as general data management and sharing practices.

Engagement And Partnerships

Community engagement is a critical component of local government for shared decision making and collective problem solving. As emerging technologies are deployed across cities in new and novel ways, cities are grappling with how to educate the public on the specifics of various technologies and installation plans, how to solicit feedback on the project, how to identify problems and solutions as a community, and how to be accountable and share lessons learned.

In addition, high costs, civil liberties concerns, and the technical knowledge required to evaluate technology often necessitates that cities engage outside partners to help with a project, from the private sector to academia to community organizations.

Below are two examples — from New York and Chicago — of how cities are engaging communities and relying on partnerships when deploying emerging technologies.

New York City and the NYCx Co Lab Brownsville Project

In 2017 the Mayor's Office of Technology and Innovation in New York, New York launched the Neighborhood Innovation Lab also known as the NYCx Co-Lab. The intent of the lab is to solve local problems using technology in collaboration with local residents, technology companies, community organizations, and other stakeholders.

The first collaboration was in Brownsville, a small neighborhood in Brooklyn with high poverty and public housing and a history of low investment from the City. Osborne plaza was chosen to be the anchor site for the project, and the team decided to install smart furniture for residents of Brownsville to test out. They installed:

- BigBelly solar trash and recycling containers that alert the sanitation department when full,
- Soofa park benches that can charge residents' cell phones using solar power and collect data on when and how frequently the plaza is used, and
- LinkNYC kiosks that provide WiFi and information on city services.

Technology workshops and trainings for community members of all ages also take place in Osborne plaza, as part of this effort.

In addition to the above pilot, the Co-Lab also hosted brainstorm sessions and community forums over the course of several months to identify need. Out of this collaborative needs assessment came two priorities: one to enhance and encourage residents to use public spaces at night and another to reduce waste and increase recycling rates. These needs became the subject of two NYCx Co Lab challenges titled "Safe and Thriving Night Corridors" and "Zero Waste in Shared Space." These challenges called for technology solutions to each of the problems, and se ected winners would each receive $20,000 to pilot their solution in Brownsville.

Chicago and the Array of Things

In 2016, Chicago announced a partnership with the University of Chicago and Argonne National Laboratory to install environmental sensor nodes around the city. Together, the nodes create a network of senso·s (mounted on light posts) that collects a host of real-time data on Chicago's environmental su·rounding and urban activity. The nodes can hold up to 15 sensors and also include a computer, two cameras, a microphone, and a cooling fan. In addition, the software, hardware, specifications etc., are open source. The project is known as Array of Things and is thought of as a "fitness tracker" for the city.

Since the Array o· Things involves multiple, networked cameras and sensors, a key part of Chicago's community engagement was related to privacy. The City engaged subject matter experts, including the Electronic Frontier Foundation and the American Civil Liberties Union, to write a draft policy. This was then released for public comments using Madison, a platform that allows residents to leave comments and annotations on legislation as well as see what other residents have commented on. From here, the City incorporated feedback and the policy was then approved by an oversight council (which was advised by a technical privacy and security working group) and again made public.

Smart Chicago Collaborative, a civic organization funded by the MacArthur foundation, the Chicago Community Trust, and the City of Chicago, began educational outreach soon after the program was announced. Initially Chicago sought input on policies and where nodes should be located. However, the City soon realized it first needed an educational component that described the technology (including what it could and could not do) to a lay audience as well as the broader goals for the technology.

Chicago also launched its first effort at youth education and engagement with Array of Things, called "Lane of Things." Lane of Things is an 8-week course taught to Lane Tech High School

students. The course covers computer science topics and teaches about the sensors deployed around the city as well as uses for the data. Chicago hopes to expand this program to other schools in the coming years.

Digital Divide And Equity

Many cities have begun to attempt to correct for the systemic racism and injustices that guided policymaking for decades. Some cities are attempting proactively to promote inclusion, offer tailored services, and provide opportunities for economic growth to underserved neighborhoods, people of color, those with disabilities, and other communities that face discrimination.[1]

The implementation and distribution of technology in a city can further marginalize communities, offer solutions that improve the safety and quality of life for these communities, or a mixture of both. By making equity an explicit focus for emerging technologies, cities can help to ensure they grapple with how technology might disproportionately impact underserved communities and/or make proactive policy that seeks to improve quality of life.

Below are two examples of how Portland and Seattle think of equity and emerging technology.

Portland and it's Smart City PDX Framework

In June 2018. Portland City Council in Oregon adopted the Smart City PDX Priorities Framework, the result of a collaboration between 14 departments and all five City Commissioners' offices. Portland's framework established guiding principles for evaluating proposals and choosing data and technology investments throughout the City, with a stated focus on "addressing the problems of and reducing disparities for communities of color and people with disabilities." These principles, which must be adhered to in order to receive PDX funding, include:

- The community should lead identification of needs, priorities, and solutions. The community should also be involved in designing projects and making decisions.
- Evidence-based interventions and success metrics decided with community input
- Commit to ongoing refinement and evaluation of projects
- Make data freely available and accessible so that the public can evaluate decisions and create their own solutions
- Be effective partners with outside groups including academia, non-profit organizations and national consortiums, other agencies, and private sector companies

Portland identified the following focus areas for its framework:

- Economic Prosperity
- Public Safety
- Human Health
- Environmental Health
- Transportation/Mobility
- Education
- Housing
- Resiliency

[1] Note: the section titled Accessibility will seek to explore equity with regards to those who are differently abled.

The City will use its Smart City Steering Committee to implement the framework and share, manage, and evaluate smart city policies and projects, funding opportunities, and potential partnerships. The Committee is led by the Bureau of Planning and Sustainability (BPS), Mayor's Office, Portland Bureau of Transportation (PBOT), Office for Community Technology (OCT), and the Bureau of Technology Services (BTS).

Seattle and dockless bikes

Seattle, Washington was an early adopter of dockless bicycles. The City began a pilot in early 2017 after ending their municipal docked bikeshare program due to financial problems. To participate in the pilot, companies needed to apply for a permit and meet requirements across several criteria including safety, parking, insurance, data, and equity.

To encourage hiring and other opportunities for underserved communities, Seattle has identified a tier of neighborhoods throughout Seattle that are economically distressed and should be prioritized. The tier is based on three indicators:

1. rate of people living 200% under the poverty level,
2. unemployment rate
3. and the number of people over 25 without a college degree.

For the dockless bike permit, the City required that companies include neighborhoods in this tier in 20 percent of their service area.

Unfortunately this requirement did not act as intended. Companies simply designated their service area as "Seattle" rather than noting specific neighborhoods. The companies argued that because they are dockless, it is hard to say where the bicycles will end up.

Initial data suggests some diversity in ridership and good coverage in those tier one neighborhoods (riders skew white, young, and male). For the next phase of the permit, the City is looking into creating more specific requirements for promoting an equitable distribution of bikes throughout the city and encouraging companies to service areas in the far north and south areas of the City.

Accessibility

As cities becomes places where residents increasingly rely on technology for services and navigating the city, cities need to ensure that the technology used is accessible to everyone. This includes those with disabilities as well as older populations.

Cities should challenge themselves to ensure each product they install is accessible. Cities should also work to mitigate any harmful consequences that piloting or installing new technology might have on differently-abled residents (e.g. ensure scooters are not in the public right of way). Finally, cities should be responsive to feedback and look at how technology can be used specifically to solve problems for this demographic (e.g. accessible pedestrian signals).

Below are examples from Detroit, New York City, and the California Legislature, which is currently debating an accessibility bill with regard to transportation network companies.

Detroit and adaptable cycling program

Detroit launched its bikeshare program, called MoGo, in May 2017. After a successful first year with over 120,000 rides, the City decided to create a pilot program that provided cycling options to those who cannot ride a traditional bike.

The pilot program is provided via a partnership with the City, a local bike shop called Wheelhouse Detroit, and a nonprofit called Programs to Educate All Cyclists (PEAC). The six month pilot provides 13 different types of cycles, including tricycles, hand tricycles, incumbents, tandem bikes, and cargo bikes.

Rather than the traditional bikeshare program where bikes are docked at stations around the city and ready to go at any time, the adaptive bikes must be reserved ahead of time and all are stored at one Wheelhouse Detroit location. Staff at Wheelhouse is trained to help riders find the appropriate bike and get set up and if the cyclist had a companion rider, the companion rides for free.

MoGo and PEAC are working on outreach to inform residents about the program. The City is also conducting surveys and focus groups to determine what works about the program and where there is room for improvement. After the pilot ends in October 2018, the City plans to evaluate the program and make necessary changes.

New York City and LinkNYC

In 2014, Mayor De Blasio issued a request for proposals (RFP) to reinvent New York City's payphones. The RFP asked for plans that would provide free WiFi and phone calls as part of a digital equity campaign.

The Mayor's Office for People with Disabilities got involved in the writing of the RFP to ensure it included accessibility standards. These standards were developed by looking to the Americans with Disabilities Act, web accessibility standards (WCAG 2.0), and a digital toolkit prepared by G3ict, a global initiative for inclusive information and communication technologies. Some standards include an appropriate height range, using braille on any buttons, and selecting a tablet that has built-in accessibility features. In addition to engaging early and getting accessibility language in the RFP, the Office for People with Disabilities also acted as one of the judges for the RFP.

A Google-funded company called CityBridge won with their LinkNYC kiosk. The 9.5 foot tall kiosks are equipped with device charging capabilities and a tablet that could browse maps, city services, and the internet. LinkNYC chose to use an Android tablet, which had accessibility features like screen reading, magnification capability, and the option to invert colors. However, CityBridge did not initially turn on these functions and the company was eventually sued by the National Federation of the Blind. The lawsuit was settled after CityBridge agreed to turn on these functionalities as well as create a dedicated shortcut key to request assistance with a Link, accessibility training for staff at CityBridge, and the appointment of an accessibility coordinator to ensure the changes were made. The Office for People with Disabilities has continued to work with CityBridge on improving accessibility and adding additional features.

California and SB 1276, transportation network companies (TNCs) and accessibility for persons with disabilities

California Senator Jerry Hill introduced bill SB 1276 into the Senate in early 2018. The bill would require California Public Utilities Commission to develop regulations for transportation network companies (TNC) like Uber and Lyft regarding accessibility accommodations, including those who need a wheelchair accessible vehicle. The bill passed the Senate and is currently making its way through the Assembly.

If the bill is enacted, Public Utilities Commission would be required (by 2020) to conduct workshops with cities, counties, advocacy organizations, etc., to develop programs for on-demand services, service alternatives, and partnerships. The bill would also require each TNC to be accessible and would impose a fee on TNCs until they comply. This fee would then be applied to fund on-demand accessible transportation services for persons with disabilities. Any party that is funded would need to provide detailed reports regarding number of rides and geographic availability. Importantly, this bill would also alter TNCs liability and protect them from lawsuits from the disabled community.

Data Sharing

Data is what makes a smart city "smart." By generating new and traditionally hard to come by data, ensors and other emerging technology can create new insights about how residents engage with their city and how the city can adjust its services or design to improve quality of life.

There is no shortage of examples from the private sector about the level of insights that can be made from a wealth of data. However, cities can have a hard time acquiring meaningful data from companies. Owning all or some of the data is also a challenge because more data means more security vulnerability.

Cities have taken different approaches to data sharing, from asserting ownership over the data to trying to collect as little as possible. Below are some examples from Boston and Seattle.

Boston and autonomous vehicles

In 2016 Boston Mayor Marty Walsh signed an Executive Order to begin testing of autonomous vehicles with the goal of making transportation more reliable, safe, and accessible. Mayor Walsh granted oversight to the Transportation Commissioner who would lead oversight and development of policies along with the Department of Transportation and the Mayor's Office of New Urban Mechanics.

Generally, the City's approach to data is to own as little as possible while setting out requirements to ensure companies are collecting data to evaluate the pilot. In the autonomous vehicle pilot, companies working with the city (like nuTonomy and Optimus Ride) must collect and provide upon request data necessary for evaluating the cars. The City also reserves a right to demand specific data (regarding unexpected occurrences, safety issues, etc.) if needed.

In addition to this policy, Boston requires companies to release data publicly, especially when devices are in the public right of way, as a transparency measure. For example, autonomous vehicle companies are required to create and make public quarterly usage reports. These reports must include information on crashes, miles and locations driven, conditions driven in, and failures and disruptions while in autonomous mode. Finally, companies must also host at least two public meetings to share their research agenda as well as thoughts on infrastructure needed, feedback on policy, data collection, and partnerships.

Seattle and dockless bikes

As mentioned in the section "Promoting equity," Seattle's dockless bicycle pilot began in 2017. A challenge Seattle faced in getting data is that multiple companies were participating in the pilot. Since Seattle, like many other cities, has broad open data and request for data protocols companies were afraid any proprietary data collected might be made public and reveal business strategies to competitors.

To get around this issue, Seattle partnered with the University of Washington via the Transportation Data Collective. The University collected and analyzed the data and then rolled it up into reports that the City received. This collaboration was not perfect. For instance, because one of the companies was very small, one could identify them in the aggregated data. However, the partnership was a creative one that allowed for interesting insights and lessons learned.

For example, Seattle designed a mandatory survey that the companies had to administer to their riders via company apps. The University of Washington was able to tie the survey responses to rider identification numbers, which allowed the University to see connections between responses and how the respondent uses the service. The City also had to manage difficult situations such as how to handle companies who did not comply with administering the survey, who only somewhat complied by administering it to a few riders, or who changed the questions in the survey.

Seattle and traffic sensors

In 2016 Seattle began using adaptive signal control, a Siemens technology that automatically adjusts in real time the timing plan of traffic signals based on prevailing conditions and traffic demands. Simply put, the city set up sensors, transponders, and a data platform that allows for longer green lights and/or shorter reds along high traffic corridors when pedestrian traffic and cross-route traffic was low and adjust in real time as traffic patterns change.

The current program in Seattle is a pilot known as Mercer SCOOT for its location along Mercer street and an acronym for the system (split cycle offset optimization technique). Early data seems to indicate that the system reduces traffic time by a small margin but traffic reliability by a large one, meaning that while there is still traffic along the commute, it is more predictable (e.g. you know you'll be in 20 minutes of traffic everyday rather than 20 minutes one day and 45 the next).

Seattle determines the best data ownership and sharing policy for each specific project. For the traffic sensor program, the City owns all of the data. The data goes directly to City servers and only goes to Siemens if there is a specific issue or need. The City owns the data partly because of the nature of the project using real-time information, and partly because the City did not want this data to be sold by companies. While the City owns the data, it does not own the software and thus is not responsible for key software updates and modifications, such as modifying the application programming interface (API). One lesson learned for the City was that establishing these policies required very knowledgeable attorneys on the topic of data sharing.

Privacy

Recent high-profile hacks and internal data misuse at private companies, nonprofits, and political organizations have put the public on notice about the safety of their personal information. This type of information is referred to as personally identifiable information (PII) and includes names, social security numbers, addresses, financial information, and any other data that could be used to identify individuals.

In light of concerns over data privacy, public institutions around the world have reacted in ways that will drastically impact how emerging technology can be used in cities. Most important is the European Union's recent enactment of the General Data Protection Regulation (GDPR), which creates stringent data privacy rules. Since this regulation is already shaping privacy practices globally, we include GDPR as a case study below along with privacy policies implemented in Oakland and Seattle.

European Union and the General Data Protection Regulation

The General Data Protection Regulation (GDPR) is in effect for any government inside the European Union (EU) as well as any private organization that collects information about citizens within the EU.[2] The GDPR establishes many regulations for handling PII, including requiring data protection by design and by default, data anonymization, clear public/customer notice of data practices, and the right of public/customer access to their personal data. These regulations were recently implemented and cities are currently grappling with how the regulation impacts emerging and smart city technology.

GDPR requires organizations to justify the legal basis for collection of PII, meaning cities and companies will have to use one of the following in order to justify collecting personal data:

1. **Consent:** "the data subject has given consent to the processing of his/her personal data for one or more specific purposes." Ex: A customer buys a product online. At checkout, the company offers a check-box to "sign up for weekly newsletter," which includes information about data use as well as the right to opt out.
2. **Contracts:** "processing is necessary for the performance of a contract to which the data subject is party to or in order to take steps at the request of the data subject prior to entering into a contract." Ex: To use a free trial, customers may need to share personal information like credit card or contact information.
3. **Legal Obligation:** "processing is necessary for compliance with a legal obligation to which the controller is subject." Ex: A criminal investigation requires processing PII.
4. **Vital Interests:** "processing is necessary to protect the vital interests of the data subject or another natural person." Ex: An individual is admitted to the hospital with life-threatening injuries. The disclosure to the hospital of the individual's medical history is necessary in order to protect her vital interests.

[2] There are some important exemptions for governments re national security, law enforcement, protection of national interests, etc. Countries within the EU can also apply for country-specific exemptions. There are also some nongovernmental exemptions for journalists, religious organizations, etc.

5. **Public Interest:** "processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller." Ex: The tax authority's collection and processing of an individual's tax return
6. **Legitimate Interests:** "processing is necessary for the purposes of the legitimate interests pursued by the controller or by a third party, except where such interests are overridden by the interests or fundamental rights and freedoms of the data subject." Ex: A company is seeking to provide its customers with more personalized services so it hires a consulting agency and shares market research which includes PII.

Oakland and its Privacy Advisory Commission

In 2013 Oakland attempted to expand to the entire city a monitoring system the city used to surveil its port, called Domain Awareness Center (DAC). This system would have combined data from cameras, microphones, and other monitoring devices throughout the city to create a system the Electronic Frontier Foundation called a "city-wide surveillance apparatus." A coalition of local activists and civil liberties organizations successfully blocked the expansion of DAC.

Oakland City Council responded to the DAC controversy by passing an ordinance that created a privacy advisory commission. The commission includes a mayoral appointee as well as select members from city council. The commission is charged with providing "advice to the City of Oakland on best practices to protect Oaklanders' privacy rights in connection with the City's purchase and use of surveillance equipment and other technology that collects or stores our data." Note the policy only applies to data collected from technology and is focused mostly on the narrow issue of surveillance technology.

Under the guidance of its privacy commission, the City recently passed one of the most stringent data privacy laws, called the Surveillance and Community Safety Ordinance. This law requires public notice for the proposal of a new surveillance technology by holding a public meeting of the privacy commission. The law also requires that "meaningful public input" is sought for all decisions regarding surveillance and that public opinion is significantly weighted.

Seattle and its privacy program

In 2013 Seattle was scrutinized after the discovery that the Seattle Police Department acquired two drones with facial recognition software via a grant from the Department of Homeland Security without informing the public, the Mayor, or City Council. Civil rights organizations like the American Civil Liberties Union and community members argued that the drones were a breach of civil liberties and privacy rights because they had the capacity to recognize and track individuals. Mayor Mike McGinn promptly cancelled the program.
Under the direction of the Chief Technology Officer and Chief Privacy Officer, Seattle created two committees that would develop privacy policies for the City. The first was an internal group of representatives from 15 city departments and the second was an external privacy advisory committee of academics, local companies, activist groups, and private legal organizations. These committees disbanded after the writing of the privacy policies but a Community Technology Advisory Board still meets regularly to make recommendations to the Mayor and City Council.

Seattle's data guidelines also include:

- providing clear public notice re collection and use of PII during time of collection and on .gov website
- collecting only the data necessary for the city to achieve its stated goals
- being accountable by appropriately securing data and ensuring no unauthorized access
- sharing information carefully and requiring outside vendors to agree to the city's privacy policy
- creating a data retention schedule. This schedule provides a timeline for disposing of personal information or de-identifying data and making public.

Enforcement

As cities build frameworks for emerging technology and increasingly test out new technologies with pilot programs and permits, one key challenge is enforcing the rules and regulations. Cities might want a technology to be accessible to vulnerable populations or might require that the technology be placed in a safe location that does not disrupt the use of the public right of way. However, enforcing those rules in a systematic way can be tricky and cities might not have sufficient staffing and budgetary capacity to appropriately inspect and enforce the rules .

Below are examples from Santa Monica and New York City that illustrate the challenge of enforcement.

Santa Monica and electric scooters

Electric Scooters (beginning with the Santa Monica based company, Bird) made their debut in Santa Monica in late 2017. After many complaints regarding safety, Santa Monica's City Council adopted an emergency ordinance establishing an impound fee for scooters parked in the right of way. Eventually this led to a lawsuit between the City and Bird for unpaid impound fees, which Bird settled for $300,000. As part of the agreement, the company also agreed to run a weeklong safety advertising campaign on public buses.

The emergency ordinance is in place until September 2018, when a 16-month pilot will begin with up to three companies being granted permits. The pilot may require scooters to have "lock-to" technology, or some mechanism that allows a user to lock the scooter to a bike rack or other piece of street furniture. This requirement would be unpopular with Scooter companies because very few scooters come equipped with this technology currently. However, lock-to technology would help the city ensure that the right of way be kept clear.

The pilot also allows the city to experiment with "geo-fencing" technology, which would allow the City to create digital perimeters around real locations in Santa Monica. These geo-fenced locations could specify valid parking locations to scooter users. Companies might then be required to move any scooters parked outside of the designated areas, and would be given a certain number of hours to do so. This system would need to be built, and whether or not Santa Monica would be able to determine systematically if companies were requiring with the rules would still need to be determined.

Both lock-to and geo-fencing offer Santa Monica potential solutions to enforcement that do not rely solely on resident complaints or hiring enforcement officers to issue citations however the solutions each come with trade offs.

Forecasting

Technology forecasting attempts to predict upcoming technologies and the anticipated impact they may have on society. Forecasting may also be used to help cities determine which technologies they should invest in for the long-term. This is an important topic as many cities are considering large-scale technology infrastructure projects that will shape the type of services they can offer in the future.

One feature of new technologies is especially important: connectivity to one another. By connecting traffic sensors to smart cars to parking sensors, your car can guide you on the quickest route to where you are going and find, as you approach your destination, available parking spaces within a specified distance to where you're going, taking into account parking restrictions. However, these insights require interoperability of various devices, fast WiFi, and ubiquitous deployment. This gets complicated if a city is developing its system of networked devices over time, as is the case with almost all cities. What if first generation sensors are not equipped to speak to 10th generation devices? What if you invested in a new technology that became obsolete rather than the industry standard?

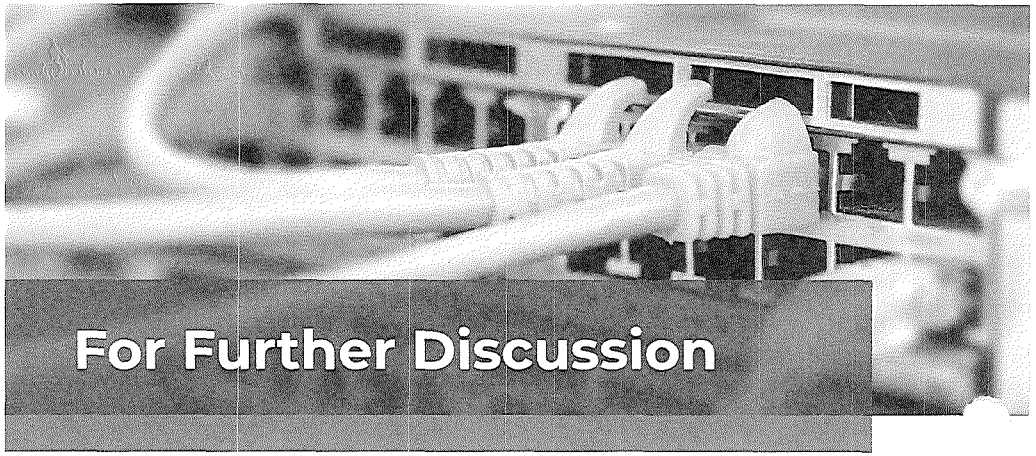
Below is a case study from our friends at the Federal level on how to create space and bring experts together to forecast on technology and policy.

President Obama and the President's Council of Advisors on Science and Technology

Initially began by President George W. Bush, President Barack Obama rechartered the President's Council of Advisors on Science and Technology (PCAST) with an Executive Order early in his first term. The Council was made up of 21 Presidential appointees who were not in federal government and had distinguished careers in science, technology, and/or innovation.

The Council brought together scientists, engineers, health professionals, etc., to provide a "diversity of experience and views to advise national strategy to nurture and sustain a culture of scientific innovation." The Council engaged scientists in the work of public policy, often by asking them to forecast and make recommendations to plan for the future of various industries including health, energy, education, networking and information technology, advanced manufacturing, and nanotechnology, among others.

For example, PCAST produced a report regarding the future of the United States' health information systems. The report urged the government to adopt a universal exchange language, which allows medical records to be transferred more easily while updating privacy and security measures applied to health records. PCAST argued this system would better enable the country to improve patient care (lowering future costs) and create new healthcare markets.



For Further Discussion

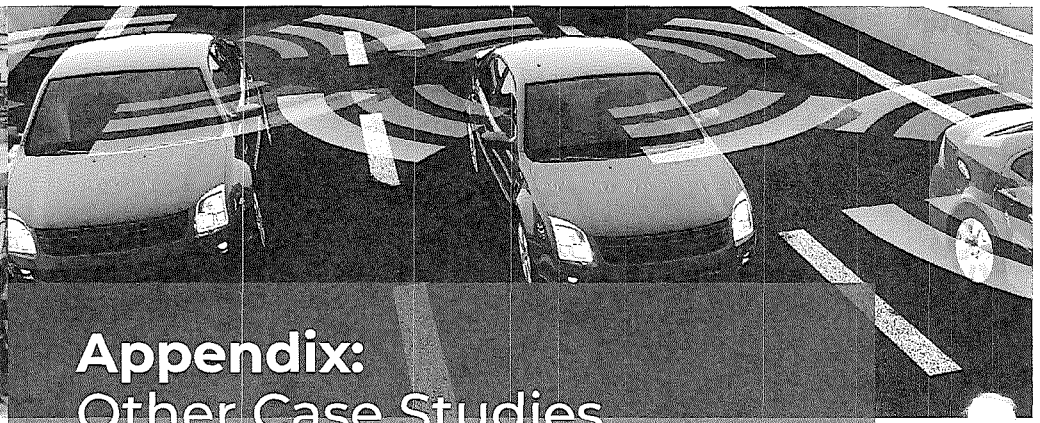
Emerging technology is amorphous by its definition. Smart Cities' nascency means that there are several issue areas that are challenging or currently left unanswered. This section lists some of the areas we feel need to be discussed further when it comes to emerging technology in cities:

- **Economic sustainability.** How can cities ensure the long-term economic sustainability of a permitted project that relies on private companies for service (many of which are new)? Is procurement more economically sustainable? What are the tradeoffs? What are the economic implications of long-term contracts? How can cities determine the best economic model for a project?
- **Future proofing.** How can cities ensure today's devices will be compatible with tomorrow's technology? How can cities asses technology for longevity and interoperability? How can cities ensure their practices are environmentally sustainable and minimize e-waste?
- **Data and decision-making.** How can cities ensure more data leads to better decisions? What practices can cities follow to make data easy to analyze and combine with other data sets?
- **Security.** How can cities ensure the physical safety of devices? What about cybersecurity concerns? How have cyber threats changed over time? What are best practices regarding risk management for cybersecurity? How can cities deal with changing cybersecurity standards over time? How can city staff at all departments be more familiar with cybersecurity protocols?
- **The changing privacy landscape.** How will the GDPR impact smart city development in the EU? What can other regions learn from the EU in case similar policies are passed? How are companies thinking about privacy in light of the shift towards government ensured privacy?

Conclusion

We hope this report offers a glimpse into how cities are approaching and regulating emerging technologies. There is no one-size-fits-all model for responsible and smart implementation of new technology. However, we believe this collection of case studies demonstrates the spectrum of responses cities have taken and what they have learned in their approach. We hope more research and discussion will continue around the eight issue areas we focused on as well as the items listed in our 'for further discussion' section.

We are grateful to all of the cities who spoke candidly about their process, wins, and lessons learned. The insights we gained will continue to be invaluable as we develop a framework around emerging technology in San Francisco.



Appendix: Other Case Studies

Below is a collection of additional case studies that illustrate other ways cities are testing and using emerging technology. Many of them could be bucketed into the themes above, but we wanted to keep those sections targeted and readable. The case studies below illustrate the spectrum of what is possible.

San Jose and autonomous vehicles

Part of the "Smart City Vision" in San Jose, California is to become a "demonstration city" and reimagine the City as a laboratory for transformative technologies. This includes creating pathways for start-ups to access opportunities to pilot products via the City's Demonstration Partnerships policy that City Council passed in 2008 and amended in 2011. This policy allows the city to enter pilots or testing projects[3] — which often includes offering staff time, city resources, and/or policy exemptions — with companies if the project will accomplish one of the following goals:

- create new markets and new jobs or/and support existing local innovators
- improve quality and efficiency of City services and operations
- advance the City's Green Vision and Economic Development Strategy
- educate the public about innovative solutions.

San Jose identified as a strategic goal to increase mass transit ridership and was interested in testing autonomous vehicles. To achieve this, the Mayor's Innovation Office hosted two roundtables in 2017 with industry stakeholders to discuss city resources and goals as well as case studies from other cities. The City then released a detailed RFI (including a single point of contact, current infrastructure and resources, details on pilot locations, intended goals of the pilots, etc.) asking companies to submit AV project ideas. The City received 31 responses, 21 more than they expected to receive, and ultimately chose to interview 5. San Jose is currently working out data sharing agreements with a few companies before the pilot begins.

[3] San Jose refers to "pilots" as a service, product, etc. that is already in the marketplace and that the city is interested in trying out. "Testing" projects refers to a service, product, etc. that a company approaches the city with in order to evaluate efficacy.

New York City and Soofa smart benches

After nearly 40 years and over $60 million in restoration, New York City reopened Highbridge Park, which links Manhattan to the Bronx. The Parks Department wanted data on park use but the traditional method -- sending employees to monitor park entrances -- was onerous and limited in utility. Instead, the City deployed smart benches made by the company Soofa as part of its "Smarter Parks" initiative.

Soofa smart benches look like traditional park benches but with big box in the middle that is outfitted with a solar panel. Using this power source, the bench can charge park visitors' cell phones and other devices. Most important, however, is a WiFi scanner that counts the number of WiFi connections that pass by (within 75 feet), meaning that each person carrying a smartphone or device will register (anonymously). This will help give staff an accurate picture of park volume at different times as well as the duration of stays in the park and, because of strategic placement of the benches, a sense of each visitor trajectory. The City says this data will help the park to justify capital improvements, guide investments, and schedule maintenance.

New York City and BigBelly trash and recycling bins

In 2017 Mayor De Blasio of New York City announced his office's latest battleground: rats. The strategy was multi-pronged including limiting for apartment buildings the number of hours that trash could be on the street for pickup, replacing dirt floors in the basements of public housing with concrete ones, increasing fines for illegal dumping, and investing in new smart trash bins called BigBelly.

BigBelly garbage and recycling bins have trash compactors inside that allow them to hold eight times the level of garbage as a traditional garbage can. They are powered by solar and are also online, allowing the cans to communicate to the Department of Sanitation when they are almost full. Most importantly for rats, they are completely enclosed and therefore "rat-proof."

New York City first piloted BigBelly in Times Square in 2013. The goal for that pilot was to both increase the recycling rate and make trash collection more efficient. The installation of the smart bins increased the recycling rate from 15 percent to 40 percent and reduced by 50 percent in time spent collecting trash.

The 2017 project will cost $32 million in total, which includes a few million for 336 BigBelly bins (they cost $7,000 per bin). The City is targeting the most infested areas: the Lower East Side and Chinatown in Manhattan, Bushwick and Bed-stuy in Brooklyn, and Grand Concourse in the Bronx. The goal is to decrease the rat population by 70 percent. While there are no current updates from the City, residents have been complaining that many of the BigBelly bins have been overflowing with trash because garbage pick up is too infrequent or because the opening of the garbage is too small for some objects. Maintenance costs have also been an issue for the City, which are expensive.

Austin and dockless bikes and electric scooters

Austin, Texas has a successful docked bicycle share program that is three years old and run by a nonprofit called Austin B-Cycle. In January 2017, the City approved another five-year contract funded mostly through a federal grant.

Later that year, however, dockless bikes begin appearing on city streets with prices that are several times lower than Austin B-Cycle. In February 2018, Austin City Council met to discuss a resolution and get public input regarding a dockless bike share permit pilot program. Companies hoped to share plans for their electric scooters as well but were not allowed. Bird released scooters on to the streets without permission days later and Lime followed.

Following the deployment of scooters, City Council voted to add dockless bikes and electric scooters to an existing ordinance prohibiting abandoned vehicles from blocking the public right of way. City Council also released the permit application, which applied to both bikes and scooters. Both Bird and Lime pulled their bikes and scooters from operating as they applied for licenses.

Soon after putting out the permit, the City put out emergency rules with the most important being the requirement that by August 1 all vehicles have "lock-to" technology. However, after discussing this more with companies in July 2018, the City decided not to enforce this component for the time being. The emergency rules will expire in September and will be replaced by updated final rules.

Washington, D.C. and dockless bikes

Washington, D.C. has the second largest docked bike sharing program in the country with about 3,700 bikes (the largest is New York City's). The docked system, which is owned publicly and operated privately by Motivate, has been very popular. However, as dockless bike companies began deploying around cities throughout the U.S., D.C. decided to create a pilot to test dockless bikes.

In the fall of 2017, the District's Department of Transportation (DDOT) granted seven companies (Jump, Spin, ofo, Mobike, Limebike, Waybots, and Bird) permits that allowed up to 400 bikes each. In addition to standard rules requiring parking out of the public right of way and providing insurance, bike companies were also required to provide a monthly (anonymized) data report on bike usage, routes taken, number of bikes parked illegally, etc. These reports allowed DDOT to compare use to the docked program (however DDOT had a very hard time getting these reports from companies). Early data indicates that for the docked program each bike was used on average 5-6 times, compared to an average of 2-4 for dockless.

During the pilot, companies began complaining that 400 bikes was insufficient for economic sustainability over the pilot period, which they believed was too long. One company, Ofo, pulled out of the pilot and removed all bikes from the District. D.C. eventually expanded the pilot through the summer as it tries to decide how many dockless bikes to allow and what operating fees and regulations to apply in the post-pilot period.

Kansas City and smart kiosks

In 2016 Kansas City, Missouri opened its new free streetcar through downtown. The City decided to test a number of IoT devices along the 2.2 mile route as part of its effort to make Kansas City a "living lab." One of these devices was a smart kiosk.

Kansas City worked with Smart City Media to install 25 "City Posts," giant tablet-like kiosks with touch screens and a number of apps that the company designed with the City. The goal of the kiosks are to provide hyperlocal information to users. This can include the history of the location you are nearest to, bikshare information, and neighborhood events and stores as well as streetcar times, city services, and way-finding. All 25 kiosks cost the City around $1 million however due to revenue generated through advertising on the kiosk, Kansas City expects for the costs to be paid off in about five years.

Because of the broad authority given to the streetcar project, the kiosks did not go through a pilot process but instead were given a 'fast track' permit. In the first year the city made $170,000 in cash back to the city and the kiosks were used nearly 300,000 times. The City also found that the kiosks were especially helpful in spreading emergency information, such as tornado warnings. The City is expanding its use of kiosks by adding 12 to the airport, 10 at the University of Missouri- Kansas City, and 68 along a new rapid bus transit line.

Barcelona and smart parking

In 1992 Barcelona, Spain hosted the Olympics and invested in something that would position it as an early smart city adopter: a network of fiber optic cables. This connectivity has allowed for deployment of sensors for irrigation, controlling street lights, monitoring environmental conditions, and parking (among others).

Barcelona first piloted a parking system with a company called Worldsensing. Through a city program created to foster economic development using technology in the 22@Barcelona District, Barcelona provided office space and permits to Worldsensing to test their product. The City installed 100 sensors in the asphalt in the 22@Barcelona district. These sensors can tell when a car is parked in a given spot and transmit the information to an app.

After the pilot in 2014, Barcelona's software team ultimately chose to develop its own mobile smart parking system called L'apparkB. This system also allows drivers to pay for parking on the application. A year after adoption, the City issues about 4,000 parking permits every day.

Los Angeles and smart street lights

Los Angeles, California is in the early phases of testing out sensors installed on street lights, with a goal of full deployment of smart poles by the 2028 Olympics. The City is currently testing Philips' Smart Poles and one ENE-HUB pole, and is in discussion with vendors to have a larger scale pilot. The capabilities Los Angeles is discussing for their smart poles includes WiFi, gunshot detecting, lighting controls, electric vehicle charging, traffic control, cameras, and USB charging stations.

The City plans to fund this initiative with revenue made by allowing companies to provide 4G (or potentially 5G) LTE and charging them for this right. The City is also testing solar panels on the tops of street poles to generate electricity.

The potential of smart street lights to impact several departments across the city led to new levels of interdepartmental coordination and collaboration. Departments first met for a workshop to discuss priorities and system requirements and later formed a Smart City Coordinating Group that meets regularly.

San Diego and smart street lights

San Diego, California first looked to LED lights as a cost-saving measure during a fiscal crisis. Shifting 35,000 street lights from sodium vapor lights to more efficient LEDs led to less maintenance and saved the city $2.2 million a year. However, the City wanted to be able to tell when LEDs started to degrade so they worked with GE to connect the devices through a wireless network. This allowed the City to tell how much energy a streetlight was using as well as dim and brighten the lights as needed.

The City experimented with more street light technology with its pilot of 50 sensing lights designed by Current, a subsidiary of GE. The cost-savings potential of the street lights as well as the potential for new data to help solve problems led San Diego to expand this program to 3,200 sensing lights at a cost of about $30 million (financed with GE Capital). The City expects the cost-savings to pay for the investment in about 13 years.

The current capabilities of the smart lights focuses on communicating to drivers open parking spaces. The City is exploring what additional items it will add on, including Shotspotter (a gunshot detector), sensing car crashed and alerting the proper authorities, and understanding more about dangerous intersections by looking at close calls as well as crashes.

The City is also making data publicly available and hosting, along with GE, hackathons to encourage software developers and entrepreneurs to create apps that help residents. Some that have already sprung up are an app that helps people find the quietest route to their destination, an app that uses the data to help the visually impaired cross the street, and an app that helps food trucks find an open space that is close to big crowds.

San Diego and autonomous drone delivery

In May 2018, the U.S. Department of Transportation announced that San Diego was selected (along with 10 others) to participate in an experimental commercial drone program. The goal of the program is to both test, in a real setting, using drones for commercial delivery and work with the Federal Aviation Administration to develop rules and regulations around commercial drone use.

The City has various partners for this pilot, including 20 regional partners like Chula Vista, company partners like Uber, and other organizations like the University of California, San Diego (UCSD). Each of these partners has a different interest in drones:

- Chula Vista is interested in drone usage for firefighters or police in emergency situations
- Uber is interested in food delivery via drones, and
- UCSD is interested in flying specimens to other locations for expedited review

Other partners include AT&T, Intel, GE Venture, Port of San Diego, and the San Diego Regional Economic Development Corporation, each of whom will provide connectivity, airspace monitoring, or other needs. San Diego is in the process of applying for expedited waivers and approvals for all of its regional partners in order to start testing.

Appendix E: Staff Report - Innovation & Emerging Technology in San Francisco

San Francisco is the world's leading center of innovation with a significant impact on world economic activity and culture creation. As home to the top technology and creative workforce in the world, San Francisco sees an increasingly talented workforce being drawn to Bay Area companies. This is shown by the unmatched access to investment capital where the Bay Area received a record 50% of U.S. venture investment per the Venture Capital Journal in the first quarter of 2014![1] Combined, these assets have created a strong cluster of tech titans and entrepreneurial startups who are interconnected by strong cultural, professional and social networks.

Innovation in San Francisco does not end with the private sector, however. The City government is always looking for ways to be nimble, improve processes, and bolster engagement with residents in order to make life in San Francisco easy, engaging, and delightful.

As a foundational value, San Francisco is committed to responsible innovation so that all residents benefit. Specific to emerging technologies, the City has taken several steps to ensure innovation is strategic, collaborative, safe, and prioritizes residents' quality of life. To this end, the City has:

- *set a clear vision and goals to guide the City,*
- developed partnership models to problem-solve with companies, and
- deepened community engagement by providing streamlined opportunities for involvement

This short paper will preview some of the ways the City of San Francisco already is leading the charge around innovation inside the walls of local government.

[1] Venture Capital Journal: www.fenwick.com/FenwickDocuments/Silicon_Valley_grabs_record_share_of_venture_capital_activity__VCJ_News_Analysis_Private_Markets.pdf, 2014

CLEAR VISION AND GOALS

San Francisco envisions a future for the City that is safe, innovative, livable, and diverse, with streamlined city services that are focused on making life easier and more delightful for residents, visitors, and City employees. The City sees data and technology as playing a major role in achieving this vision and it has developed several strategies that will guide the City into the future.

Throughout the Emerging Technology Open Working Group, however, residents and other stakeholders commented that they were unsure how technology fits into the City's vision and goals. To help address this concern, the highlighted reports below discuss in detail how technology can help advance the City's mission. These reports include Vision Zero, the Emerging Mobility Evaluation Report issued by the County Transportation Administration Authority, and the City's five-year Information and Communication Technology (ICT) Plan.

Vision Zero

In 2014, The City and County of San Francisco adopted Vision Zero as a commitment to build better and safer streets and adopt policy changes that save lives. Previous data analysis has revealed that 70 percent of severe and fatal traffic injuries occur on just 12 percent of City streets, and disproportionately occur in low-income neighborhoods. By adopting a citywide strategy, the City hopes to make safer, more livable streets with the ultimate goal of eliminating traffic fatalities by 2024.

Vision Zero outlines several action items to achieve strategic objectives, including many that rely on emerging technology. For example, one action item includes working with the Department of Motor Vehicles to advance autonomous vehicles with appropriate safety components that prioritize passengers and pedestrians. Another action item encourages transportation network companies (TNCs) like Lyft and Uber to use driver performance tools or processes to measure safety and improve driver and/or company accountability.

Link: https://visionzerosf.org/

Emerging Mobility Evaluation Report

In July 2018, San Francisco County Transportation Authority released its Emerging Mobility Evaluation Report and adopted by the San Francisco Transportation Commission on July 24, 2018. The report measures emerging mobility services and technologies by how well each align with the City's adopted 10 Guiding Principles for Emerging Mobility Services and Technologies.

The Transportation Authority, the SFMTA, community stakeholders and Emerging Mobility service companies collaboratively identified 10 principles that inform the City's approach to emerging mobility services and technologies. These include:

1. Safety	6. Congestion
2. Supports public transport	7. Accountability
3. Equitable access	8. Labor
4. Disabled access	9. Financial impact
5. Sustainability	10. Collaboration

These principles articulate the City's values in public streets, and also serve as evaluation criteria for new and existing services and technologies seeking to deploy in San Francisco.

The Emerging Mobility Evaluation Report examines a variety of emerging mobility service and technology companies and their products or service models including transportation network companies, microstransit companies, bike sharing, and courier network services companies, among others. Using the established criteria, the City has found many benefits and issues present in emerging mobility services. Looking forward, the Emerging Mobility Report makes several recommendations, emphasizing the need for better data sharing between companies and the City as well as more pilots, partnerships, and regulations that protect residents and cover City costs. In addition to the Emerging Mobility Guiding Principles, these recommendations will serve as a guide to how San Francisco approaches emerging mobility services.

Link: www.sfcta.org/emerging-mobility/evaluation

Information and Communication Technology Plan

The Information and Communication Technology (ICT) Plan is a financial and strategic document that anticipates the future of City technology for the next five years. The most recent plan (for years 2018-2022) presents a vision of improved City services through the enabled use of technology so that San Francisco can continue to build a community that is safe, diverse, and welcoming to all.

The ICT plan identifies three strategic goals governing City technology to help guide City investments. The goals are to:

1. Support, Maintain, and Secure Critical Infrastructure
2. Improve Efficiency & Effectiveness of City Operations
3. Increase Access & Transparency to Local Government

Ultimately, how the City uses technology today shapes how and to what extent we can leverage new technologies in the future. In the years to come, San Francisco looks to use new and emerging technologies to better improve life for residents in San Francisco.

Link: https://sfcoit.org/strategy

PILOTS AND PUBLIC-PRIVATE PARTNERSHIPS

San Francisco engages regularly with technology companies in order to evaluate potential impacts and ensure smooth implementation of emerging technologies throughout the City and within City government itself. As was frequently discussed in the Emerging Technology Open Working Group, collaboration with technology companies and startups is a critical step towards anticipating new technologies.

The City has several means for engaging, from traditional collaboration models including pilots and permits to more novel and creative processes. The latter include Civic Bridge and Startup in Residence (STIR), which were created by the Mayor's Office of Civic Innovation.

Pilot and permit process

One way the City engages with emerging technology companies is through the pilot and permitting process. The particulars of the process -- including what departments are involved and the application materials required -- is determined by the technology's planned operations and how the company and/or its product will engage with the City's public space. For example, factors like if the product interacts with space on the sidewalk, curb, roadway or some combination will impact which Departments must issue permits.

Departments have different processes for handling pilots and permits. Generally, when a new technology comes to San Francisco, the permitting process begins with the department issuing a time-limited permit (i.e. pilot). Legislation is also frequently created to to establish guidelines and the application process. Once the product is reviewed and undergoes a public hearing, a decision is made about what companies can operate in the City. At this point, a pilot can launch.

A recent example of a company going through this process with the San Francisco Municipal Transportation agency is Scoot, an electric moped and scooter share company. Scoot had internal policies that prioritized City collaboration. The company reached out to the City prior to starting service to get legislation passed and receive the correct permit. They also provided a point of contact to the city agencies, which increased accountability and helped lead to a successful moped pilot. Recently, Scoot was also granted a permit to participate in the City's electric scooter pilot.

Link: www.sfpublicworks.org/services/permits

Civic Bridge

Inside local government, the City also has several collaborative partnership models to help make government more collaborative, responsive, and inventive. Civic Bridge is a four-year old program housed within San Francisco's Office of Civic Innovation. Civic Bridge is a cohort-based program that recruits private sector professionals to volunteer their time to work on critical City issues.

Recent examples of successful Civic Bridge collaboration include a partnership between the Mayor's Office of Housing and Community Development (MOHCD) and Google with a goal to make it easier to search and apply for affordable housing. A team of four volunteer employees from Google worked alongside MOHCD for sixteen weeks to prototype and scope a project for a new digital public service that would let users search and apply for city-funded housing programs online The result of the collaboration is the award winning DAHLIA San Francisco Housing Portal, which won a Good Government award from the San Francisco Bay Area Planning and Urban Research Association (SPUR). By collaborating with local partners, the City was able to kickstart the creation of a simpler, easy-to-use product with transformative potential.

Link: https://www.innovation.sfgov.org/civic-bridge

Startup in Residence

Startup in Residence (STIR), another initiative led by the Office of Civic Innovation, supports City Departments by fostering partnerships with early stage technology companies to solve civic problems. For 16 weeks, startups volunteer their time to work with government partners to get to the root of civic challenges through user-testing, skills-sharing, data analysis, and prototyping a technology product or service.

STIR connected the Family and Children's Services team at San Francisco's Human Services Agency (HSA) with a new startup called Binti. The team at HSA was seeking a mobile friendly, cloud-based software solution for individuals interested in becoming foster parents in San Francisco's foster care system. In addition to digitizing the current paper-based review, assessment and placement process, they wanted to improve their pipeline for potential foster parent candidates beginning with their initial interest through final certification. Finally, staff hoped this new software system would reduce the time social workers spent managing their caseloads and completing tasks required to approve new foster families.

Binti was a new software startup that worked mostly with adoption agencies. After being accepted into the STIR program and shadowing HSA employees for several weeks, Binti created a Turbotax-like software program that made it easy for people to apply to become foster care providers. They also built a public website for HSA and created an internal database for the social workers at HSA to use. This suite of upgrades has increased foster care provider applications by 300 percent, decreased the application approval period by 50 percent, and has saved social workers' time by 20 to 40 percent.

Link: https://www.innovation.sfgov.org/startup-in-residence-stir

COMMUNITY ENGAGEMENT AND PERMITTING INNOVATIONS

San Francisco always is looking for new ways to work with the community and create more joyful community spaces. In order to efficiently do so, San Francisco has experimented with different ways to streamline the permitting process so that it is more accessible to the community. The lessons learned from these innovations can be used to improve the traditional permit process and quicken time to deployment for emerging technologies. Examples of permitting innovations include Groundplay SF and the business information portal.

Groundplay

Groundplay is a multi-agency City program that combines various public space initiatives, including the Pavement to Parks and Living Innovation Zones initiatives. Pavement to Parks represents a partnership between the Department of Public Works, the Municipal Transportation Agency, and the Planning Department. The program, which launched in 2010, aims to satisfy the desire for wider sidewalks for people to sit, relax, and enjoy the city around them. The program achieves this by turning one or several metered spaces into miniature parks, called parklets, which can include seating, planting, bicycle parking, and art.

Members of the community -- business owners, local organizations, and nonprofit institutions -- are eligible to apply for a parklet permit. Initially, six parklets were installed in various

neighborhoods, including the Mission, Noe Valley, the Western Addition, and North Beach. The parklets were an immediate success, and the City released two more requests for proposals for parklet permits. As of November 2018, 54 parklets have been approved and another eight are under review.

Groundplay projects have now expanded beyond parklets to include public activation projects that use temporary installations on Market Street, the City's cultural, civic and economic spine. The spirit behind the program is to allow for the creativity of partners outside City government to develop new and insightful ways of addressing community needs and aspirations.

The application process for both of these projects is simple and entirely online. The Grounplay website hosts the application -- one form that requires items like sponsoring organizations, project descriptions, site plans, and initial design concepts. In addition, the City created an infographic to help applicants understand the project journey from initial proposal to design and permitting to installation. The Groundplay website also features past and current parklets and other projects for inspiration.

Link: https://groundplaysf.org/resources/

Business Information Portal

San Francisco is also engaging with the local business community to help make the business permit process simpler and smoother. The San Francisco Business Portal provides an interactive journey map to help guide new businesses through the 10 steps of forming a business in the City.

When a new business owner is ready to apply for permits and licenses, he/she can use the "starter kits" on the portal. These kits are organized by business type and allow people to understand easily what they need. For example, the food truck starter kit includes a two page guide that lists a l 'to do' items before launching (e.g. make an appointment with a business counselor, register your business with the City, obtain a Manager's Food Safety Certification, etc.). The kit also includes all of the relevant forms a new business owner must fill out to complete these to do's as well as some other potentially relevant information and background materials.

In its next iteration, the Business Portal will offer the ability to apply for permits online. Demonstrated through the City's new Cannabis service, permit applications will be consolidated, and business owners will be able to complete and submit their application without needing to navigate the City's departments.

Link: https://businessportal.sfgov.org/start/permits-licenses

CONCLUSION

The City has taken stock of its leadership and innovation around emerging technology and innovation as it prepares to present new recommendations to the Board of Supervisors. These recommendations build on the work of different City departments to set a clear vision and goals, collaborate with the private sector to solve challenges, and streamline city services to better engage with the community. These three items are at the foundation of many of the recommendations the City is pursuing.

Appendix F: Prototyping Evaluation Criteria for Emerging Technologies

Before launching a product to all of San Francisco, emerging technology products must comply with a series of minimum requirements to operate in public spaces. New products with unforeseen impacts should be also closely evaluated and tested on a variety of issues, most notably on ther impact on public spaces, equity, accessibility, data ethics, and security, and privacy among others.

The following describes some of the regulatory requirements all products must satisfy to operate in public spaces, followed by some proposed checklists to evaluate emerging technologies.

San Francisco Regulatory Minimum Requirements:

1. An applicant may be required to comply with various regulations, including:
   a. Americans with Disabilities Act (ADA), Title II (28 CFR part 35) and Title III (28 CFR part 36).
   b. ADA Accessibility Standards for Accessible Design (ADAS); 2004 ADA Accessibility Guidelines plus above federal regulations.
   c. California Civil Code, commencing with section 51; The Unruh Civil Rights Act.
   d. California Government Code, commencing with section 4450.
   e. California Building Code (CBC); CCR Title 24, Part 2.
   f. California Vehicle Code (CVC).
   g. California Streets and Highways Code (CSHC).
   h. San Francisco Better Streets Plan.
   i. San Francisco Privacy First Charter Amendment and subsequent legislative requirements.
2. In testing situations where food or other goods are being delivered, additional approval may be required from other stakeholder agencies, including but not limited to the Department of Public Health, SFMTA, etc.
3. All user controls and operating mechanisms shall be accessible in accordance with CBC Section 11B-309 and the ADAS Section 309.
4. If there is interaction for users (both operator and end user), accessible reach ranges to all controls and operating mechanisms shall be provided in accordance with as described in the 2010 ADAS Section 308 and CBC Section 11B-308.
5. The Permittee shall comply with the current Fire Code and guidelines including providing and maintaining minimum distances required for building access, exit egress, and access to SFFD protection services.
6. The new technology shall satisfy all federal, state and local laws and regulations.
7. The new technology shall meet minimum vertical clearance requirements as required by local codes

Minimum Accessibility Requirements on sidewalks:

1. The new technology shall provide a minimum clear path of travel meet the minimum ADA clearances requirements 6' clear path of travel in commercial corridors and 4' clear path of travel in residential corridors.
2. A minimum two (2) foot clearance is required along the curbside when operating adjacent to existing on-street parking.
3. Emerging Tech Shall not block or obstruct an accessible route (typically the pedestrian throughway zone as defined in the SF Better Streets Plan, plus facility entrances, public and private transit stops, passenger loading zones and accessible on-street parking spaces). Emerging Tech shall move out of an accessible route when a pedestrian is present and shall allow the unencumbered passage of pedestrians within the public right of way.
4. Placement on the sidewalk must not in any way interfere with curb ramps, access to the building, driveways or access to any fire escape.

5. No element of the proposed Emerging Tech may interfere with access to or egress from any building or facility.
6. No element of the proposed occupancy may be below a fire escape, obstruct access to a Fire Department Connection (FDC) , or fire hydrant.
7. Shall not impede street furniture
8. Shall not be allowed over a manhole, public utility valve or other at-grade access point in the street or sidewalk and may not be bolted to the roadway.

General Operating Requirements:

1. Submit a copy of the S.F. Business License Certificate
2. Bonding Requirement (if applicable)
3. Public Notification (if applicable)
4. The permittee shall be responsible for any damage to any facilities of the City, including but not limited to, San Francisco Public Works, the San Francisco Public Utilities Commission, and public utility companies due to this occupancy.
5. Permittee agrees on its behalf and that of any successor or assign to hold harmless, defend, and indemnify the City and County of San Francisco, including, without limitation, each of its commissions, departments, officers, agents and employees (hereinafter collectively referred to as the "City") from and against any and all losses, liabilities, expenses, claims, demands, injuries, damages, fines, penalties, costs or judgments including, without limitation, attorneys' fees and costs (collectively, "claims") of any kind allegedly arising directly or indirectly from (i) any act by, omission by, or negligence of, Permittee or its subcontractors, or the officers, agents, or employees of either, while engaged in the performance of the work authorized by this Permit, or while in or about the property subject to this Permit for any reason connected in any way whatsoever with the performance of the work authorized by this Permit, or allegedly resulting directly or indirectly from the maintenance or installation of any equipment, facilities or structures authorized under this Permit, (ii) any accident or injury to any contractor or subcontractor, or any officer, agent, or employee of either of them, while engaged in the performance of the work authorized by this Permit, or while in or about the property, for any reason connected with the performance of the work authorized by this Permit, or arising from liens or claims for services rendered or labor or materials furnished in or for the performance of the work authorized by this Permit, (iii) injuries or damages to real or personal property, good will, and persons in, upon or in any way allegedly connected with the work authorized by this Permit from any cause or claims arising at any time, and (iv) any release or discharge, or threatened release or discharge, of any hazardous material caused or allowed by Permittee in, under, on or about the property subject to this Permit or into the environment. As used herein, "hazardous material" means any substance, waste or material which, because of its quantity, concentration of physical or chemical characteristics is deemed by any federal, state, or local governmental authority to pose a present or potential hazard to human health or safety or to the environment.

6. Permittee must hold harmless, indemnify and defend the City regardless of the alleged negligence of the City or any other party, except only for claims resulting directly from the sole negligence or willful misconduct of the City. Permittee specifically acknowledges and agrees that it has an immediate and independent obligation to defend the City from any claim which actually or potentially falls within this indemnity provision, even if the allegations are or may be groundless, false or fraudulent, which obligation arises at the time such claim is tendered to Permittee by the City and continues at all times thereafter. Permittee agrees that the indemnification obligations assumed under this Permit shall survive expiration of the Permit or completion of work.
7. Permittee shall obtain and maintain through the terms of this Permit general liability, automobile liability or workers' compensation insurance as the City deems necessary to protect the City against claims for damages for personal injury, accidental death and property damage allegedly arising from any work done under this Permit. Such insurance shall in no way limit Permitee's indemnity hereunder. Certificates of insurance, in form and with insurers satisfactory to the City, evidencing all coverages above shall be furnished to the City before commencing any operations under this Permit, with complete copies of policies furnished promptly upon City request.

In addition, the Emerging Technology Open Working Group drafted criteria the City could use to evaluate issues specific to new technology. Some of these issues are still evolving and thus current regulation does not capture them. The following checklists may be helpful to develop evaluation criteria that are being tested in San Francisco public spaces.

Equity Checklist

1. Who will have access to the product? Who won't?
2. Does your product directly address an identified inequity?If yes, which one(s) and how?
3. How might your product improve equity indicators? For which communities?
4. How might your product worsen inequity? What are your mitigation strategies?
5. Does the product rely on algorithm that rely on historical data that may contain biases? What mitigation techniques are in place?
6. Have you consulted with underserved communities on your product's design or strategy?
7. Describe how your plan for evaluating your product's impact on equity after launch.

Additional Accessibility Checklist

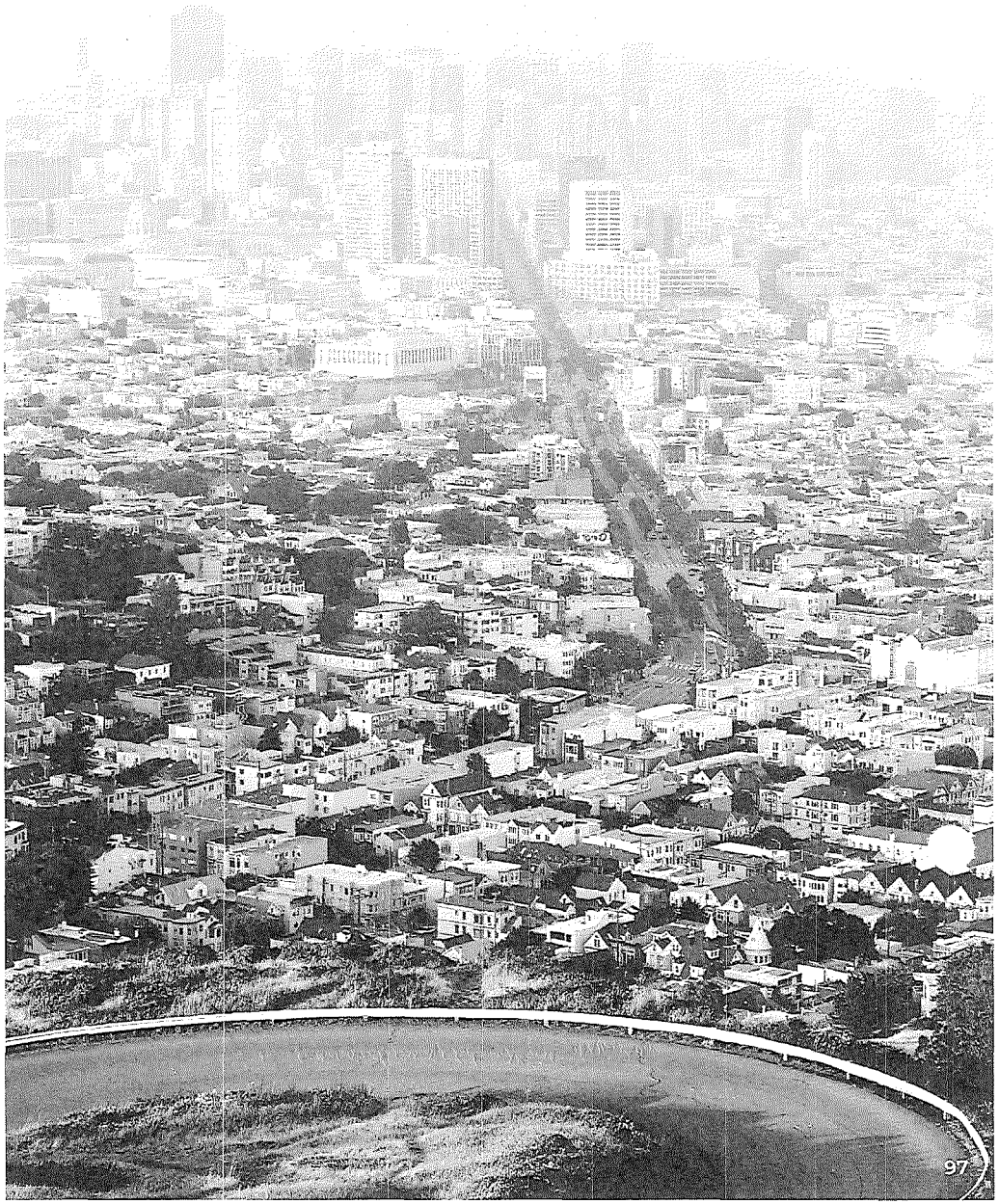
1. Is the product intended to be used in the public right-of-way?
2. On the basis of safety and access, how will the following communities be impacted by the deployment of the product in public spaces?
   - ❑ Blind or low vision
   - ❑ Chronic health (e.g. autoimmune, neurological)
   - ❑ Cognitive (e.g. intellectual disabilities, learning disabilities, autism spectrum)
   - ❑ Deaf or hard of hearing
   - ❑ Mental health or psychological disability
   - ❑ Mobility disabilities (e.g. wheelchair, walker, cane)
3. When others are using the product, how will people with sensory disabilities detect the product?
4. What accountability mechanisms are in place when issues may occur?
5. Has the product been tested to be physically accessible (504 compliance)?
6. Has the web based interface been tested to be 508 compliant?
7. Has any voluntary product analysis testing been conducted?
8. How may disabled communities benefit from the availability of this product?
9. What mechanisms are in place for disabled communities to provide feedback on design on an ongoing basis?

Data Ethics Checklist

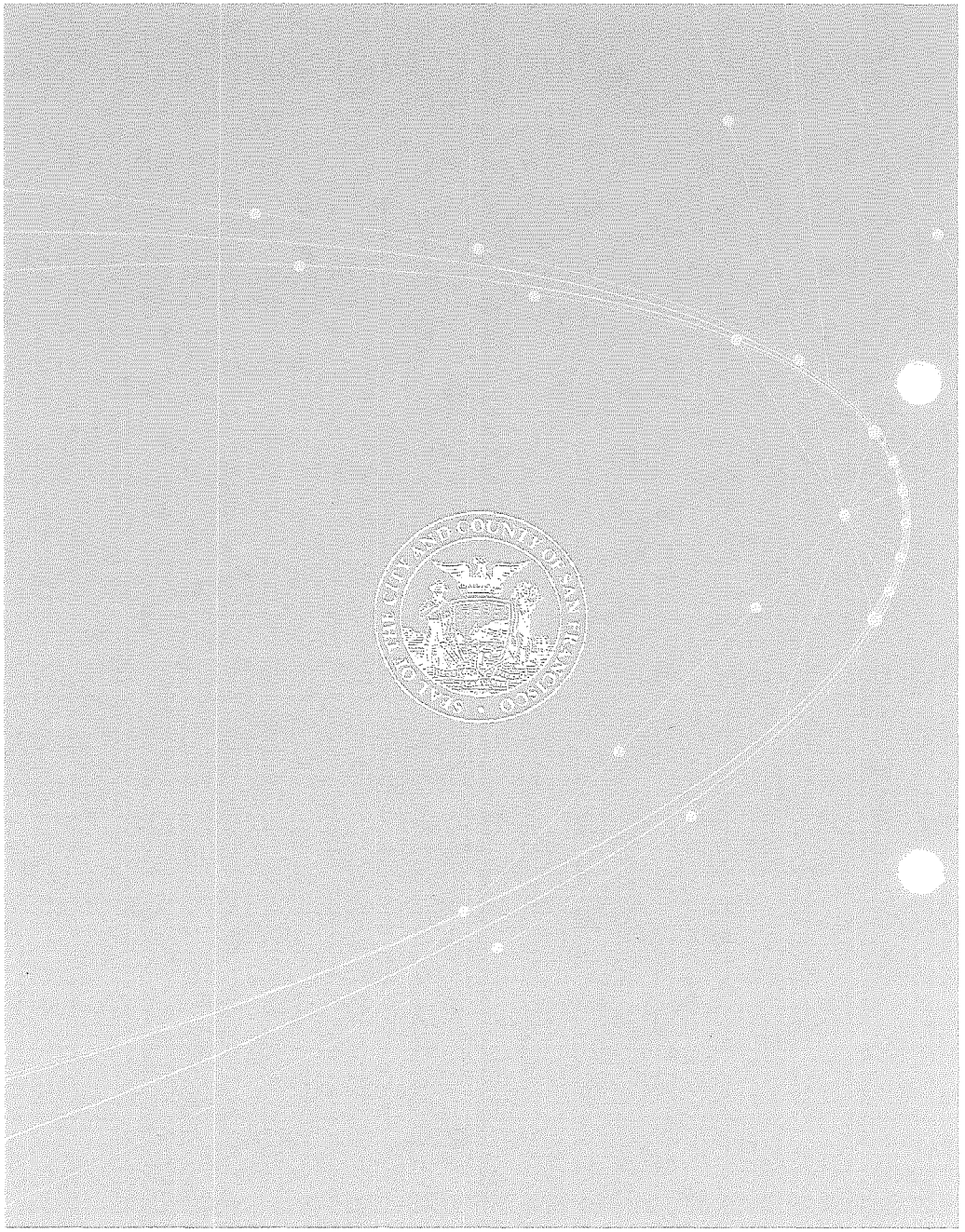
1. Is the terms of service in plain language?In multiple languages?
2. Does the company explain to users in plain language the type of data collected, collection methods, and how data will be used?
3. Do users have the ability to see what information the company has on them?
4. Are surveillance technologies used in the product and are the implications made clear to users?
5. Is there an option to use the service but "opt out" of providing personal information?
6. Will personal information be sold as a commodity?
7. Does the product use an algorithm that is based on historical datasets with potential biases?

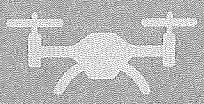
Security & Privacy Checklist

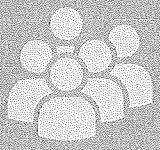
1. What kind of data will be stored, process, or accessed?
2. What is the data retention policy for each type of data collected?
3. Will sensitive data be stored, process or accessed by a third party?
4. What is the location of the data center where data is stored?
5. What is done with data collected that is not directly related to the business?
6. Does the company follow any industry security standards? Which one?
7. Can independent verification be provided to show security standards are in practice?
8. Will the product be connected to City infrastructure?(e.g. network, streetlights, power grid)
9. Does the company have an incident response plan?
10. What is the contingency plan for a data breach?
11. What happens to data if the company is bought, sold, or shut down?



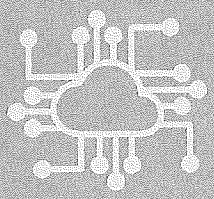
Notes:

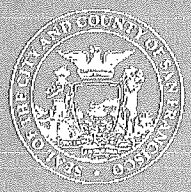


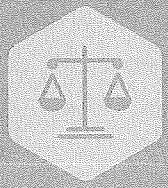












Office of the City Administrator
City Hall, Room 362
1 Dr. Carlton B. Goodlett Place
San Francisco, CA 94102
coit.staff@sfgov.org
https://sfcoit.org

191033

From: Aaron Goodman <amgodman@yahoo.com>
Sent: Monday, October 21, 2019 10:03 AM
To: Major, Erica (BOS); Peskin, Aaron (BOS); Haney, Matt (BOS); Safai, Ahsha (BOS); Board of Supervisors, (BOS)
Subject: SFBOS Land-Use - Monday October 21st - Comment (A.GOODMAN) D11

ATTN: SF BOS (Land-Use) Committee (cc: SFBOS)

As I am unable to attend the mid-day meeting today, please accept this email as my public comment on the issues below. Will keep them brief as I can but you have a lot on the agenda today needing vetting.

19054 - Jobs Housing Linkage
19089 - Jobs Housing Fit

I support both items above, in determining the best strategy forward on the creation of affordable RENTAL housing for working communities and the need to determine how to build larger housing developments for 100% affordable units.
I would ask that you also consider in the two items the relation of mass transit and equity in relation to funding areas and districts since many areas seeing the largest developments in SF are also devoid of any serious transit projects that are shovel ready and supportive prior to the construction of mass housing developments.

190971 - India Basin (Street Vacated)
I would like to submit comments on the EQUITY concerns on lacking transit proposals to improve the T-Line and the linkage between numerous developments in D10. The Pier 70 / India Basin / Alice Griffith and Hunters View, BVHP, Candlestick areas all the way around to Sunnydale from Potrero require a more robust solution on public transit. Please look into this issue with the SFMTA and how they propose to amp up the mass-transit in D10 to equitably address mass transit needs and upcoming service issues during roadway construction at Ceasar Chavez and Alemany on 101/280 already at serious congestion levels that impacts Bayshore, and the T-third. (I am in support of the India Basin project, but would like to see a more robust water-taxi, and trackless train system that loops around the BVHP and back up Geneva Harney to balboa park station to bring quickly new mass-transit solutions to these neighborhoods being developed.)

190972 - Electrification of Municipal Facilities
190974 - Energy Performance in New Buildings
I am in support of this proposal and would want to see more efforts on urban infrastructure and build out in addition to local property tax incentives to switch to solar. Costs are causing residential installers to balk at installations, especially smaller installs. Therefore it is critical to ensure smaller home-owners and businesses can switch to solar more readily.. On the energy efficieny issues LEED does not always take into account the issues of obsolescence and sound existing construction that should promote preservation and adaptive re-use. So key is to include measures that document the demolition of existing systems and buildings and their

replacement with new energy efficient systems. If we toss a recently installed roof for a new roof and solar, the carbon impacts must be addressed in the changes.

191016 - Educator Housing
Key is to determine the effects prior and loss of educator housing since 2001 (Purchase of Stonestown and portions of Parkmerced) that served as educator housing. SFSU-CSU was asked to consider staff/teacher housing at the UPS blocks. The SOTA switch downtown should be considered whether the site is for 100% future housing or an option to rebuild the school at its existing site and plan for the school SOTA to remain and the old educator building converted to shared housing co-op building downtown due to already overcongested streets in the Van Ness Market area. Which will be more dangerous for kids and teens if shifted in that area from the existing SOTA site. There is also the concerns about CCSF and teacher housing on Balboa Reservoir, and CCSF's future plans. All these sites MUST have new and adequate new transit serving the areas so please legislate to support more transit improvements in these areas.

191018 - 770 Woolsley
I am supportive of the landmarking in the hope to create a more adventurous solution with green-houses and landscaped courtyards for the future housing on this site. Their is also the need for addressing overcrowded bus services on the 44 and 8/9 lines along with the 54 which serve the D10/D11 neighborhoods. Please look into the transit issues and equity for these proposals.

191013- Mobility Permits
191033 - Office of Emerging Technology

My concern is the lacking ADA compliance on many of these new technologies that service the seniors and disabled communities. Portland and Detroit have ADA bikes for bike-share, and currently with all the mobility push, we have yet to see it adequately addressed in the pods and systems being attached to bike racks and public infrastructure. These systems are parasitical and do not adequately address EQUITY in low cost options alone. Therefore a percentage should be done financially that re-invests in public mass-transit systems connections, loops and links in existing infrastructure.

Thank you all for addressing these concerns in your discussion later today.

Sincerely

Aaron Goodman D11
amgodman@yahoo.com

BOARD of SUPERVISORS

City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco 94102-4689
Tel. No. 554-5184
Fax No. 554-5163
TDD/TTY No. 554-5227

MEMORANDUM

TO: Mohammed Nuru, Director, Public Works
Phil Ginsburg, General Manager, Recreation and Parks Commission
Ivar C. Satero, Airport Director, Airport Commission
Tom Maguire, Interim Executive Director, Municipal Transportation Agency
Elaine Forbes, Executive Director, Port Department
Harlan Kelly, Jr., General Manager, Public Utilities Commission
Andrico Penick, Director, Real Estate Division
Julie Rosenberg, Executive Director, Board of Appeals

FROM: Erica Major, Assistant Clerk
Land Use and Transportation Committee

DATE: October 17, 2019

SUBJECT: LEGISLATION INTRODUCED

The Board of Supervisors' Land Use and Transportation Committee has received the following proposed legislation, introduced by Supervisor Yee on October 8, 2019:

File No. 191033

Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works; amending the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; amending the Administrative Code to codify the Public Works Director's authority to take official actions, as defined herein, including adopting regulations for the pilot operation of emerging technology devices; amending the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for unlawful obstruction of the public right-of-way, including operation of emerging technology devices without a required permit; and affirming the Planning Department's determination under the California Environmental Quality Act.

If you have comments or reports to be included with the file, please forward them to me at the Board of Supervisors, City Hall, Room 244, 1 Dr. Carlton B. Goodlett Place, San Francisco, CA 94102 or by email at: erica.major@sfgov.org.

c: David Steinberg, Public Works
Jeremy Spitz, Public Works
Jennifer Blot, Public Works
John Thomas, Public Works
Lena Liu, Public Works
Sarah Madland, Recreation and Parks Commission
Margaret McArthur, Recreation and Parks Commission
Cathy Widener, Airport Commission
Corina Monzon, Airport Commission
Kate Breen, Municipal Transportation Agency
Janet Martinsen, Municipal Transportation Agency
Joel Ramos, Municipal Transportation Agency
Daley Dunham, Port Department
Juliet Ellis, Public Utilities Commission
Donna Hood, Public Utilities Commission
John Scarpulla, Public Utilities Commission
Mona Panchal, Public Utilities Commission
Katy Sullivan, Board of Appeals

BOS-11, Aides, CoB, Deps, LUT, BoF, Dep City Atty, Mayors Ofc

President, District 7
BOARD of SUPERVISORS

City Hall
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco, CA 94102-4689

Tel. No. 554-6516
Fax No. 554-7674
TDD/TTY No. 544-6546

Norman Yee

PRESIDENTIAL ACTION

Date: 10/31/2019

To: Angela Calvillo, Clerk of the Board of Supervisors

Madam Clerk,
Pursuant to Board Rules, I am hereby:

RECEIVED
BOARD OF SUPERVISORS
SAN FRANCISCO
2019 OCT 31 PM 3:20

☐ Waiving 30-Day Rule (Board Rule No. 3.23)

File No. _____ _____ (Primary Sponsor)

Title. _____

☒ Transferring (Board Rule No 3.3)

File No. 191033 Yee (Primary Sponsor)

Title. Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works;

From: Land Use & Transportation Committee

To: Budget & Finance Committee

☐ Assigning Temporary Committee Appointment (Board Rule No. 3.1)

Supervisor: _____ Replacing Supervisor: _____

For: _____ _____ Meeting
(Date) (Committee)

Duration: ◉ Partial ○ Full Meeting

☐ Start Time _____ End Time _____

☐ Until original Committee Member returns

Norman Yee

Norman Yee, President
Board of Supervisors

SILICON VALLEY LEADERSHIP GROUP

2001 Gateway Place, Suite 101E
San Jose, California 95110
(408)501-7864 svlg.org

CARL GUARDINO
President & CEO

November 6, 2019
San Francisco Board of Supervisors
Budget & Finance Committee
1 Dr. Carlton B. Goodlett Place, Room 244
San Francisco, CA 94102-4689

RE: Ordinance 191033 (Yee): Pilot Programs for Emerging Technology Devices

Honorable Supervisors Fewer, Mandelman, and Stefani:

I am writing on behalf of the Silicon Valley Leadership Group to express our opposition to the portion of Ordinance 191033 (Yee) that would require companies to obtain a Notice to Proceed before testing or deploying emerging technologies. This section of the Ordinance exposes private sector intellectual property to risk, reduces consumer choice, and undermines innovation.

The Leadership Group was founded in 1978 by David Packard of Hewlett-Packard and represents more than 350 of Silicon Valley's most respected employers. Leadership Group member companies collectively provide nearly one of every three private sector jobs in Silicon Valley and we have a long history of supporting policies that promote innovation, stronger economic growth and improved transportation in California.

The proposed Ordinance section regarding Notices to Proceed presents several challenges to San Francisco. First, this will create another layer of municipal bureaucracy that will increase costs and time required for compliance among companies operating in the City. These higher costs will chill innovation among new entrants in the tech space who lack resources, thereby depriving consumers of new products and services.

Second, the proposed Office of Emerging Technology (OET) will be unfairly positioned to act as a tech gatekeeper, picking which industries and products are allowed to grow and develop. Consumers and the marketplace will no longer serve this function. Moreover, there is a risk that the OET will be pressured to make its decisions on political, not technological or economic, bases.

Third, the proposed Ordinance will undermine intellectual property protections and trade secrets. Companies wishing to develop, test, and deploy new technologies will be forced to share market strategy and trade secrets in public meetings with the OET in order to obtain a Notice to Proceed.

In light of these reasons that could undermine innovation, intellectual property rights, and consumer choice, we respectfully ask you to remove from the Ordinance any language that requires companies to obtain a Notice to Proceed before testing or deploying emerging technologies in San Francisco.

Sincerely,

Peter Leroe-Muñoz
General Counsel and VP of Tech & Innovation Policy
Silicon Valley Leadership Group

Cc: Linda Wong, Clerk, Budget and Finance Committee

Wong, Linda (BOS)

From: Peter Leroe-Muñoz <pleroemunoz@svlg.org>
Sent: Wednesday, November 6, 2019 4:00 PM
To: Wong, Linda (BOS); Fewer, Sandra (BOS); MandelmanStaff, [BOS]; Stefani, Catherine (BOS)
Subject: Ordinance File No. 191033 | Office of Emerging Technology
Attachments: Ordinance File 191033 - OET, Notice to Proceed.pdf

Honorable Supervisors Fewer, Mandelman, and Stefani,

Please find attached public comment on the above Ordinance.

Thank you for your attention to this matter.

Best,
Peter

Peter Leroe-Muñoz
General Counsel & Vice President, Tech & Innovation
Silicon Valley Leadership Group
408-200-2357

Print Form

Introduction Form

By a Member of the Board of Supervisors or Mayor

Time stamp
or meeting date

I hereby submit the following item for introduction (select only one):

- [x] 1. For reference to Committee. (An Ordinance, Resolution, Motion or Charter Amendment).
- [ ] 2. Request for next printed agenda Without Reference to Committee.
- [ ] 3. Request for hearing on a subject matter at Committee.
- [ ] 4. Request for letter beginning :"Supervisor _____ inquiries"
- [ ] 5. City Attorney Request.
- [ ] 6. Call File No. _____ from Committee.
- [ ] 7. Budget Analyst request (attached written motion).
- [ ] 8. Substitute Legislation File No. _____
- [ ] 9. Reactivate File No. _____
- [ ] 10. Topic submitted for Mayoral Appearance before the BOS on _____

Please check the appropriate boxes. The proposed legislation should be forwarded to the following:

- [ ] Small Business Commission
- [ ] Youth Commission
- [ ] Ethics Commission
- [ ] Planning Commission
- [ ] Building Inspection Commission

Note: For the Imperative Agenda (a resolution not on the printed agenda), use the Imperative Form.

Sponsor(s):

Yee, Fewer

Subject:

Administrative, Public Works, Police Codes - Establishing Office of Emerging Technology; Requiring Permits for Using Emerging Technology Devices on Public Right-of-Ways

The text is listed:

Signature of Sponsoring Supervisor:

For Clerk's Use Only

Print Form

Introduction Form

By a Member of the Board of Supervisors or Mayor

RECEIVED
BOARD OF SUPERVISORS
SAN FRANCISCO
2019 OCT -9 AM 9:16
BY

Time stamp or meeting date

I hereby submit the following item for introduction (select only one):

- [x] 1. For reference to Committee. (An Ordinance, Resolution, Motion or Charter Amendment).
- [ ] 2. Request for next printed agenda Without Reference to Committee.
- [ ] 3. Request for hearing on a subject matter at Committee.
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Please check the appropriate boxes. The proposed legislation should be forwarded to the following:

- [ ] Small Business Commission
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- [ ] Planning Commission
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Note: For the Imperative Agenda (a resolution not on the printed agenda), use the Imperative Form.

Sponsor(s):

Yee, Fewer

Subject:

Administrative, Public Works, Police Codes - Establishing Office of Emerging Technology; Requiring Permits for Using Emerging Technology Devices on Public Right-of-Ways

The text is listed:

Signature of Sponsoring Supervisor:

For Clerk's Use Only

Lew, Lisa (BOS)

From:	Lew, Lisa (BOS)
Sent:	Thursday, October 17, 2019 3:12 PM
To:	Nuru, Mohammed (DPW); Ginsburg, Phil (REC); Ivar Satero (AIR); Maguire, Tom (MTA); Forbes, Elaine (PRT); Kelly, Jr, Harlan (PUC); Penick, Andrico; Rosenberg, Julie (BOA)
Cc:	Steinberg, David (DPW); Spitz, Jeremy (DPW); Blot, Jennifer (DPW); Thomas, John (DPW); Liu, Lena (DPW); Madland, Sarah (REC); McArthur, Margaret (REC); Cathy Widener (AIR); Corina Monzon (AIR); Breen, Kate (MTA); Martinsen, Janet (MTA); Ramos, Joel (MTA); Dunham, Daley (PRT); Ellis, Juliet (PUC); Hood, Donna (PUC); Scarpulla, John (PUC); Panchal, Mona (PUC); Sullivan, Katy (BOA); Major, Erica (BOS)
Subject:	BOS Referral: File No. 191033 - Administrative, Public Works, Police Codes - Establishing Office of Emerging Technology - Requiring Permits for Using Emerging Technology Devices on Public Right-of-Ways
Attachments:	191033 FYI.pdf

Hello,

The following proposed legislation is being referred to your department for informational purposes:

File No. 191033

Ordinance amending the Administrative Code to create an Office of Emerging Technology within the Department of Public Works; amending the Public Works Code to require a permit to obstruct the public right-of-way within Public Works' jurisdiction; amending the Administrative Code to codify the Public Works Director's authority to take official actions, as defined herein, including adopting regulations for the pilot operation of emerging technology devices; amending the Public Works Code and Police Code to provide for administrative, civil, and criminal penalties for unlawful obstruction of the public right-of-way, including operation of emerging technology devices without a required permit; and affirming the Planning Department's determination under the California Environmental Quality Act.

Sent on behalf of Erica Major, Land Use and Transportation Committee. Please forward any comments or reports to Erica.

Regards,

Lisa Lew
Board of Supervisors
San Francisco City Hall, Room 244
San Francisco, CA 94102
P 415-554-7718 | F 415-554-5163
lisa.lew@sfgov.org | www.sfbos.org


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member of the public elects to submit to the Board and its committees—may appear on the Board of Supervisors' website or in other public documents that members of the public may inspect or copy.