

Vertical Infrastructure in the ROW and Cellular Antennas



Design Commission *March 1, 2018*
Historic Landmarks Commission *April 9, 2018*



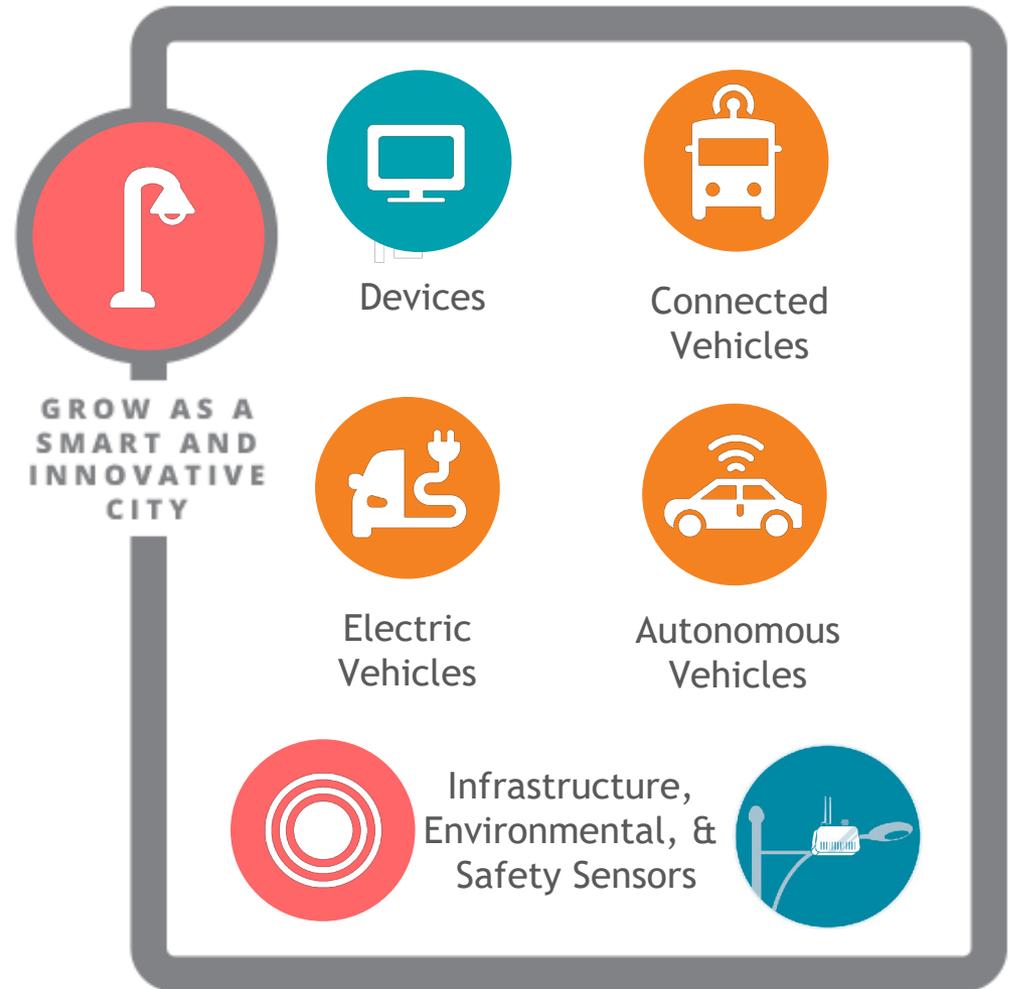
PBOT
PORTLAND BUREAU OF TRANSPORTATION


Bureau of Planning and Sustainability
Innovation. Collaboration. Practical Solutions.


City of Portland
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Community Technology

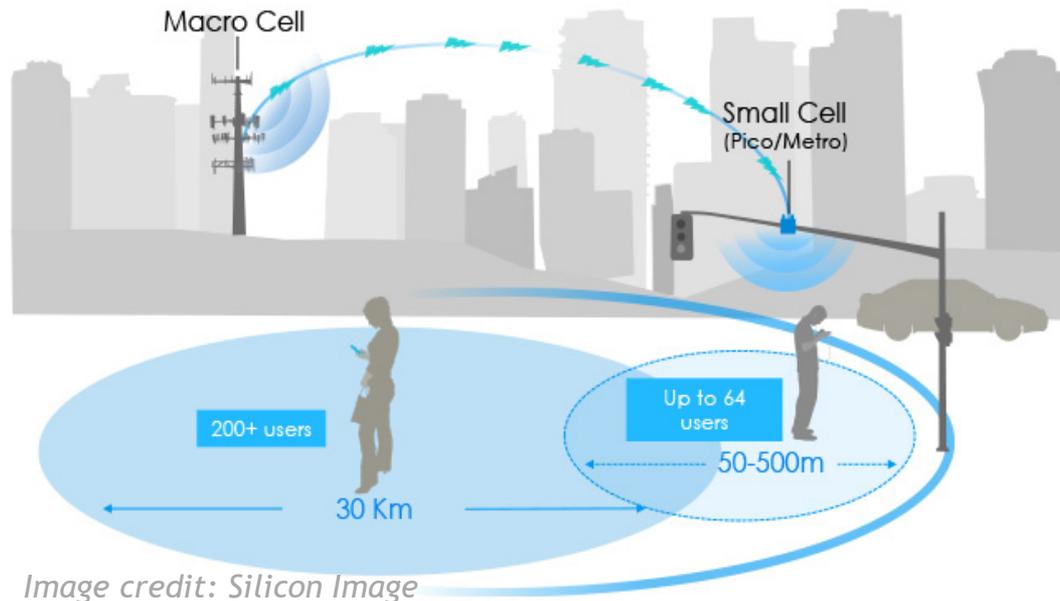
The Problem

- Rapidly growing demand for wireless and data services
- Increasing pressure on 2 of Portland's finite resources:
 - Public right of way (ROW)
 - City owned poles in ROW
- Existing policies and guidelines do not address the needs and constraints of today and the future



RF 101 – Small Cell Sites

- Small cells or distributed antenna systems (DAS) – short range, low-powered cellular radio access
- Small because these mobile phone base stations have:
 - Shorter range and handle fewer calls/sessions
 - Not because of physical size

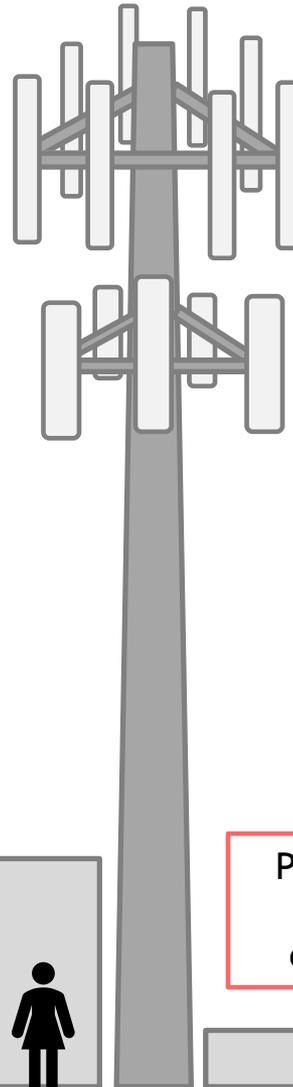
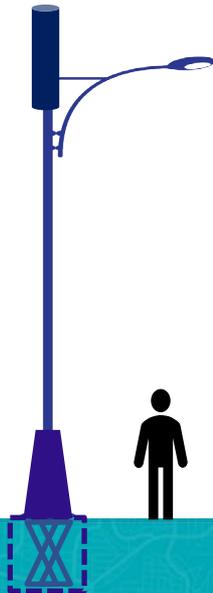


MacroCell Versus Small Cell

MacroCell Tower ~80 ft
(can range from 30-250 ft)

Small Cell Site on a Streetlight
Antenna, radio relay units,
sometimes batteries or backup
power equipment

Power supply equipment,
backup generators,
climate-controlled base



Growing Demand and Pressure

FCC requirements
< 4 carriers
—
hundreds of
locations

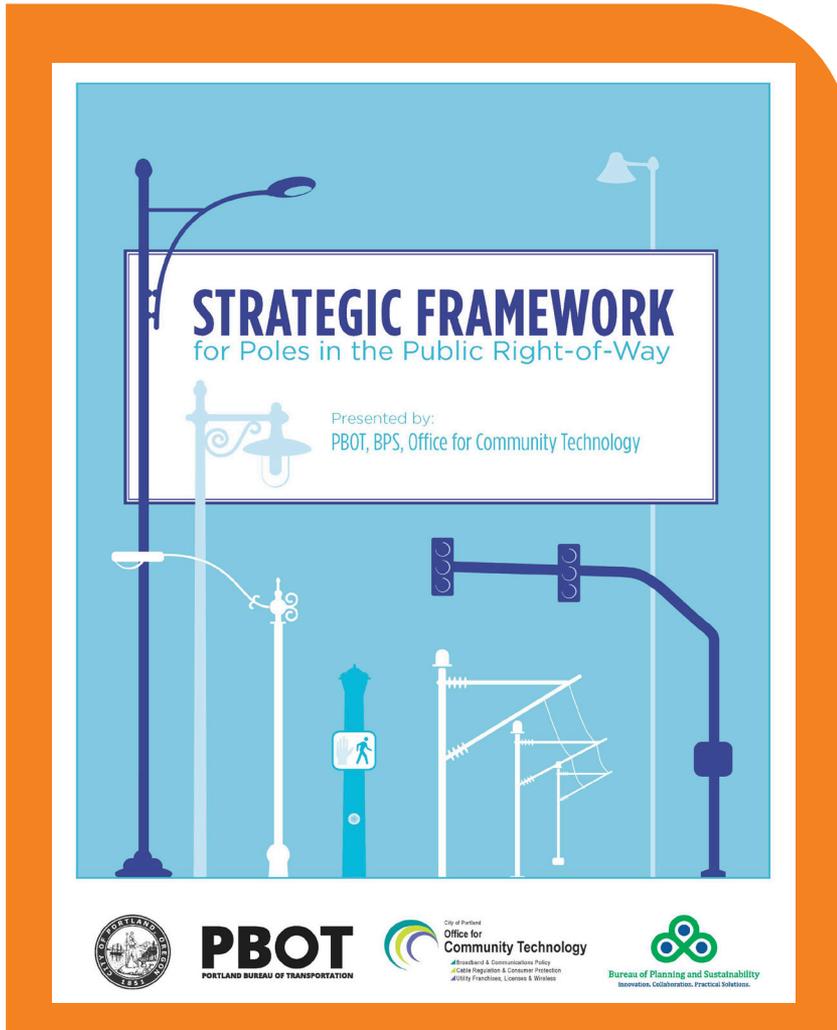


But many
needs for
reliable
connectivity

Not enough traffic
signal & street light
poles in downtown



Existing City Policies and Guidelines



- Framework prepared by multi-agency work group
 - PBOT, OCT, BPS, City Attorney
- Attachments limited in:
 - Underground Wiring Districts
 - Design and Historic Districts
 - Scenic Corridors
- Connectivity goals:
 - 2035 Comp Plan
 - Digital Equity Action Plan
 - Portland Broadband Strategic Plan



Framework Findings

Vertical infrastructure is currently underutilized – single use only

OPPORTUNITIES

- Set our own aesthetic & noise mitigation requirements
- Increase upgrade investments
- Innovative EV charging
- Improve redundancy & capacity in communication network for emergency management & connectivity needs

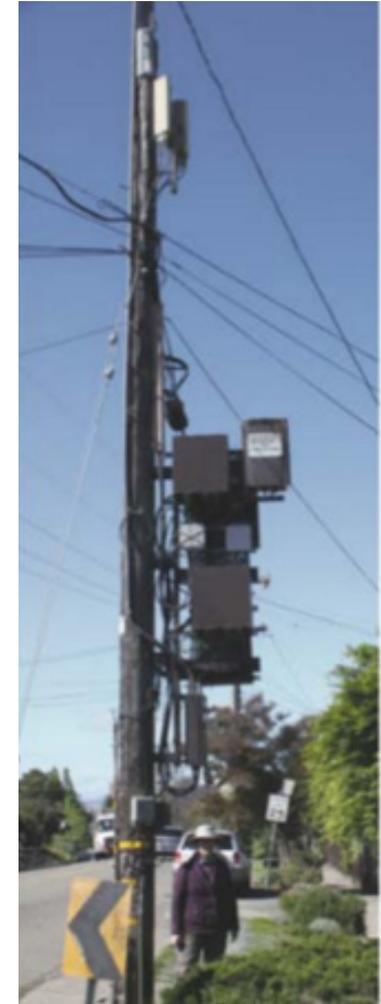
ISSUES

- Increasing pressure from competing uses
- How to ensure policies that support equitable deployment of services
- Develop comparable compensation requirements
- Maintain available space for City-owned infrastructure



Why Camouflage and Concealment is a Priority

- Exposed wires
- Multiple boxes/cabinets (radio relay units, batteries)
- Noise generating fans

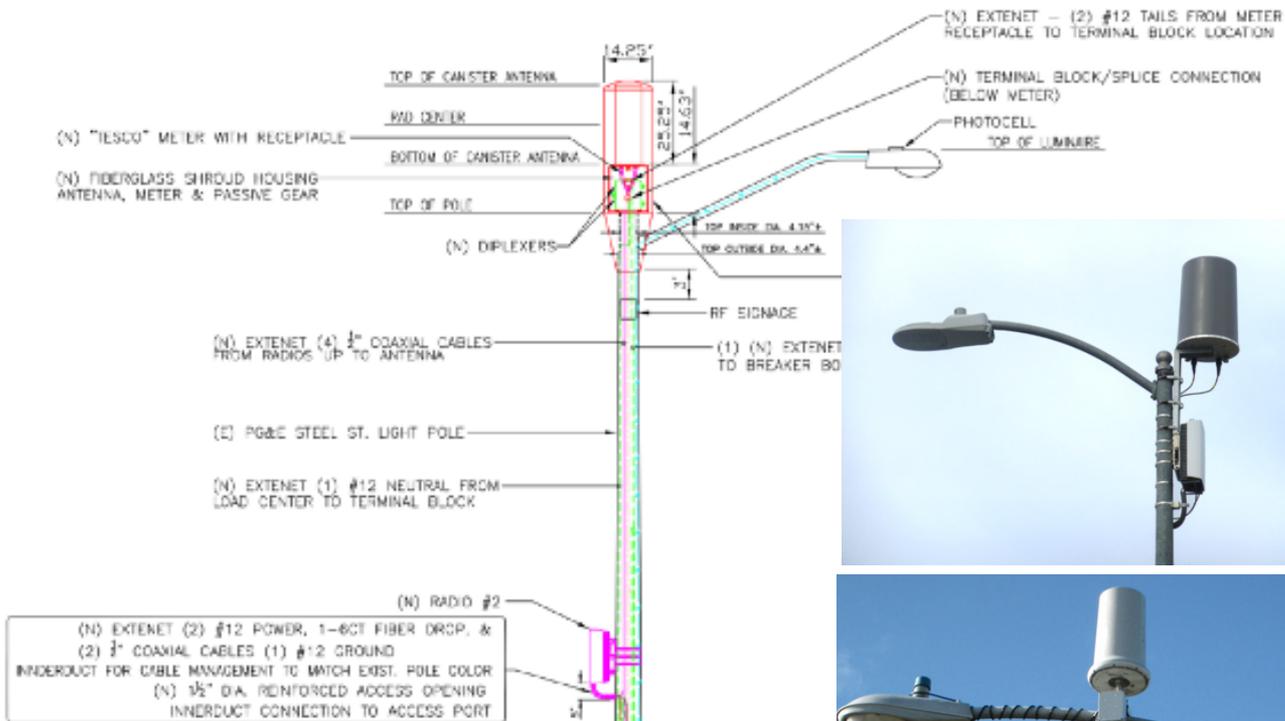


What's Already in Portland

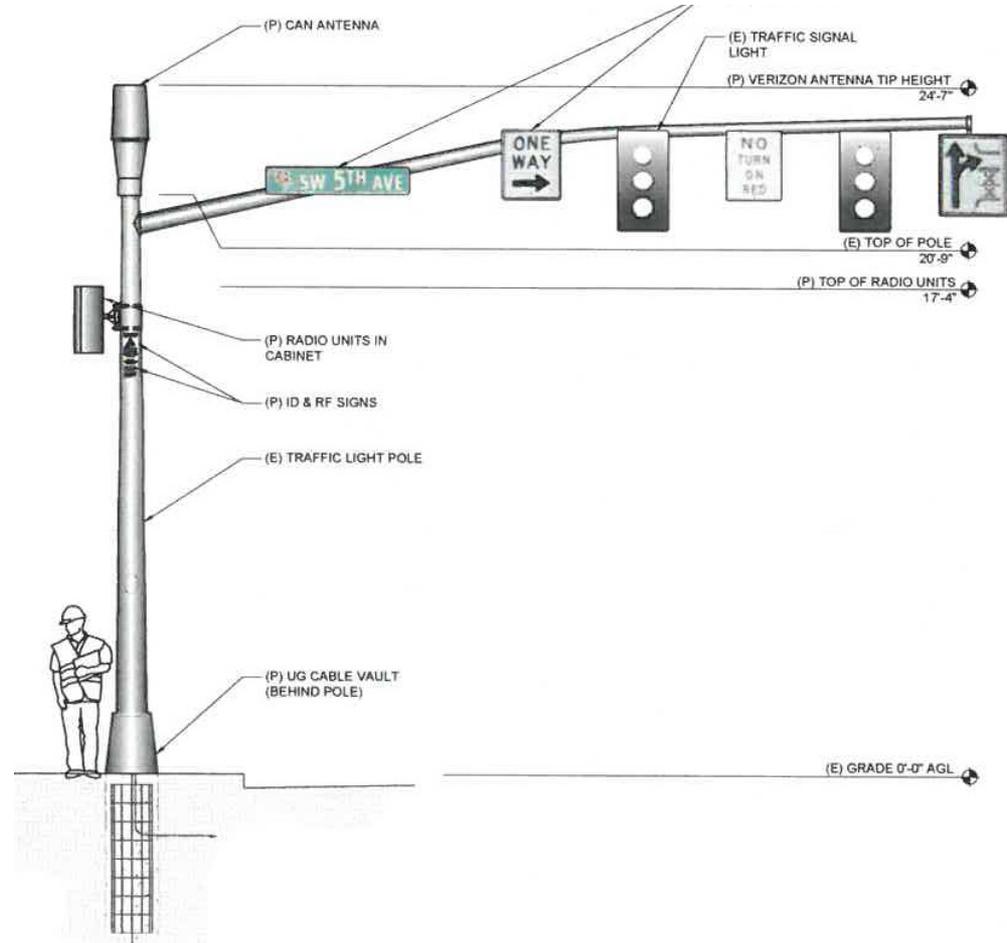


Collaborative Design Examples – Street Light

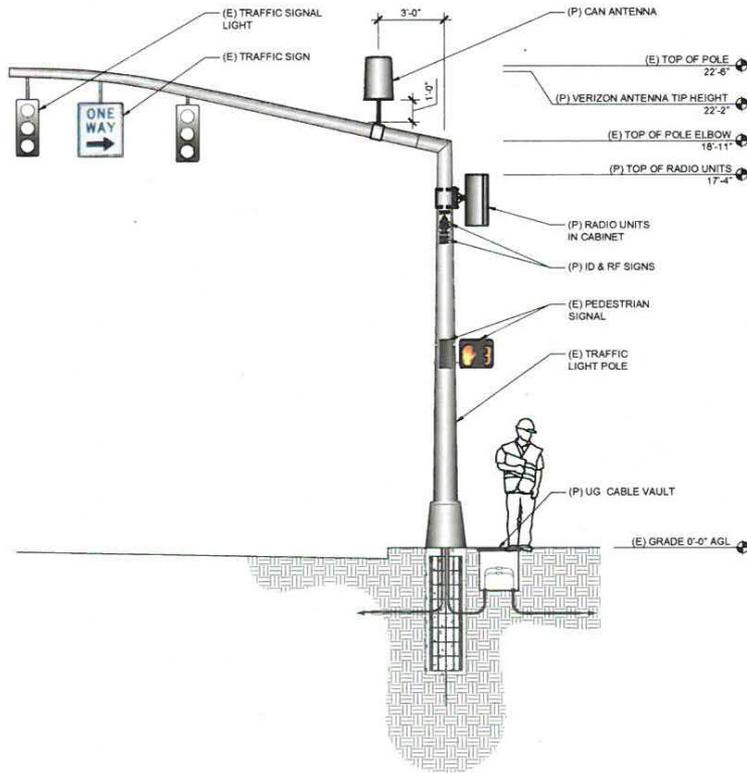
PG&E - STEEL STREET LIGHT SITE TEMPLATE



Collaborative Design Examples – Traffic Signal



Collaborative Design Examples – Traffic Signal



PROPOSED ELEVATION	NTS	2	PHOTO SIMULATION	NTS
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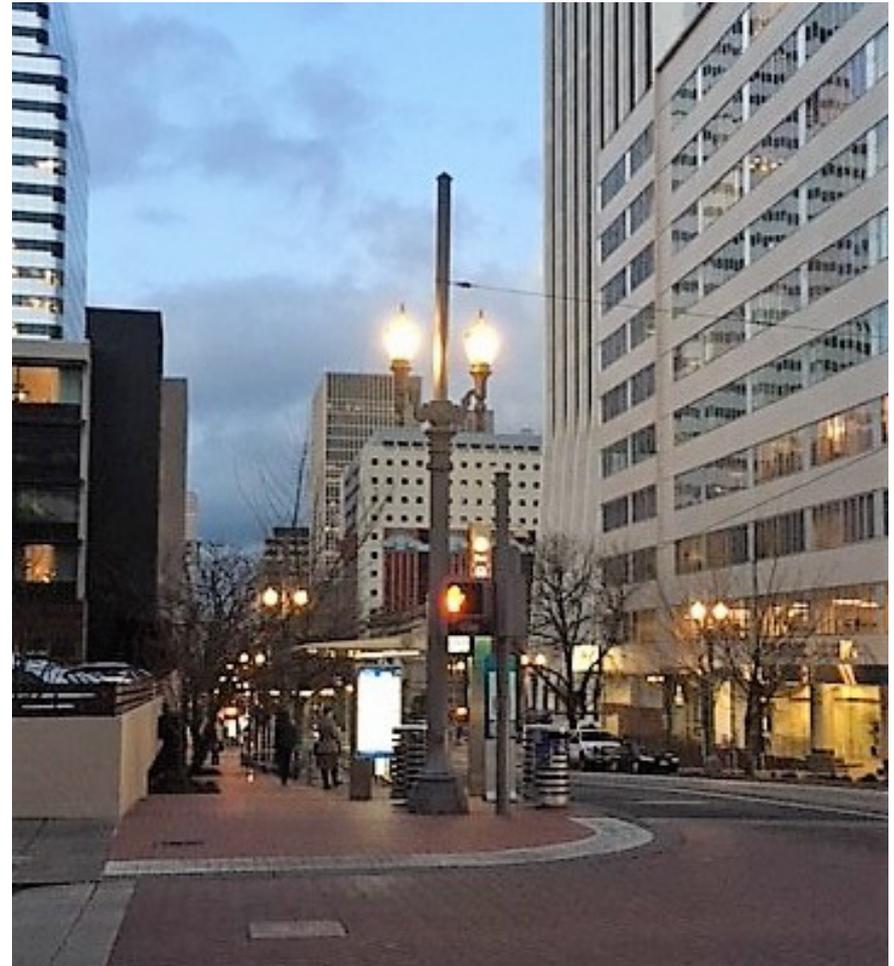
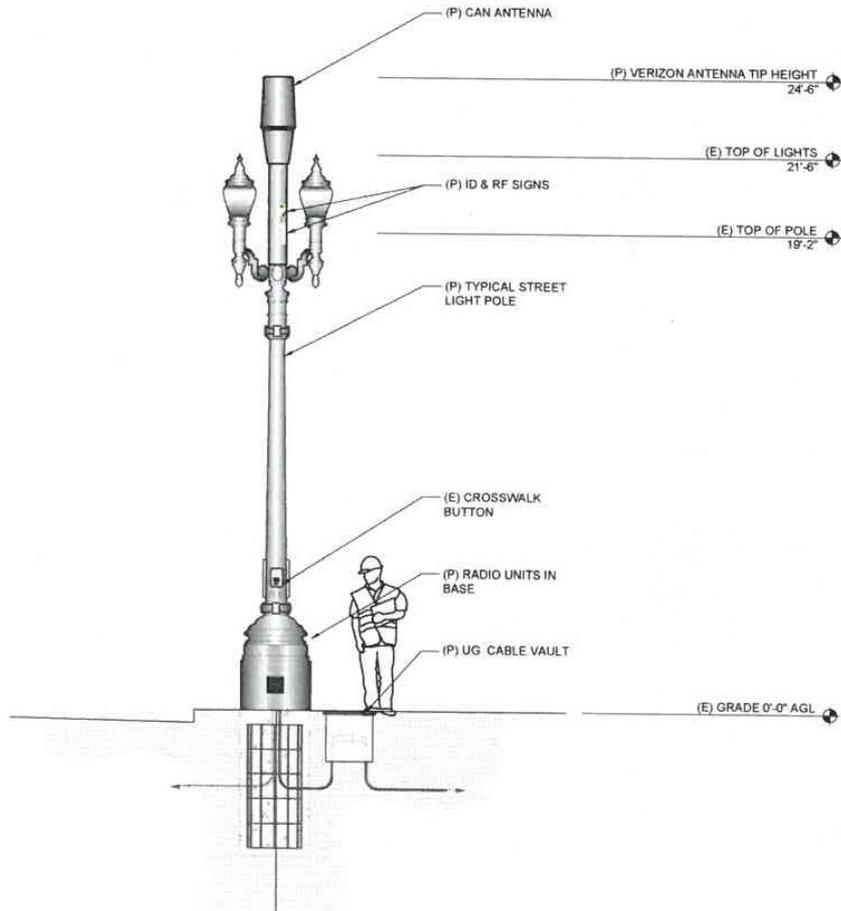
Collaborative Design Examples – Ornamental Street Light



Proposed



Collaborative Design Examples – Ornamental Street Light



Portland Catenary & Twin-Ornamental Example



Collaborative Design Examples – Catenary Pole



Stand Alone Poles?



Hierarchy of Camouflage When Available

- Focus on utilitarian poles when available
 - Traffic Signal Poles
 - Street Light Poles
 - Catenary
 - Ornamental Light Fixtures (Examples in Downtown, Auditorium District)
- For all pole options:
 1. Support equipment in vault space
 2. Larger bases
 3. Cabinets in ROW



Future Design Options → Goal is Multi-Use Poles

- Unique pole designs to support City needs + cellular carrier needs
 - Future district design
 - Capacity for EV charging infrastructure
- Public art collaborative installations
- Build wireless capabilities and infrastructure requirements into:
 - Underground parking spaces
 - Building design
 - Other options for vault space in ROW



Your Help

- Vertical infrastructure is currently underutilized – single use only
- PBOT is amending code to help move forward with multi-use planning for City-owned poles in ROW
 - FCC requirements + Growing City Needs
 - Wireless Master Plan ready for lease agreements ~June 2018
- Need your support to create the most proactive policy for our ROW:
 - Aesthetic and noise mitigation

