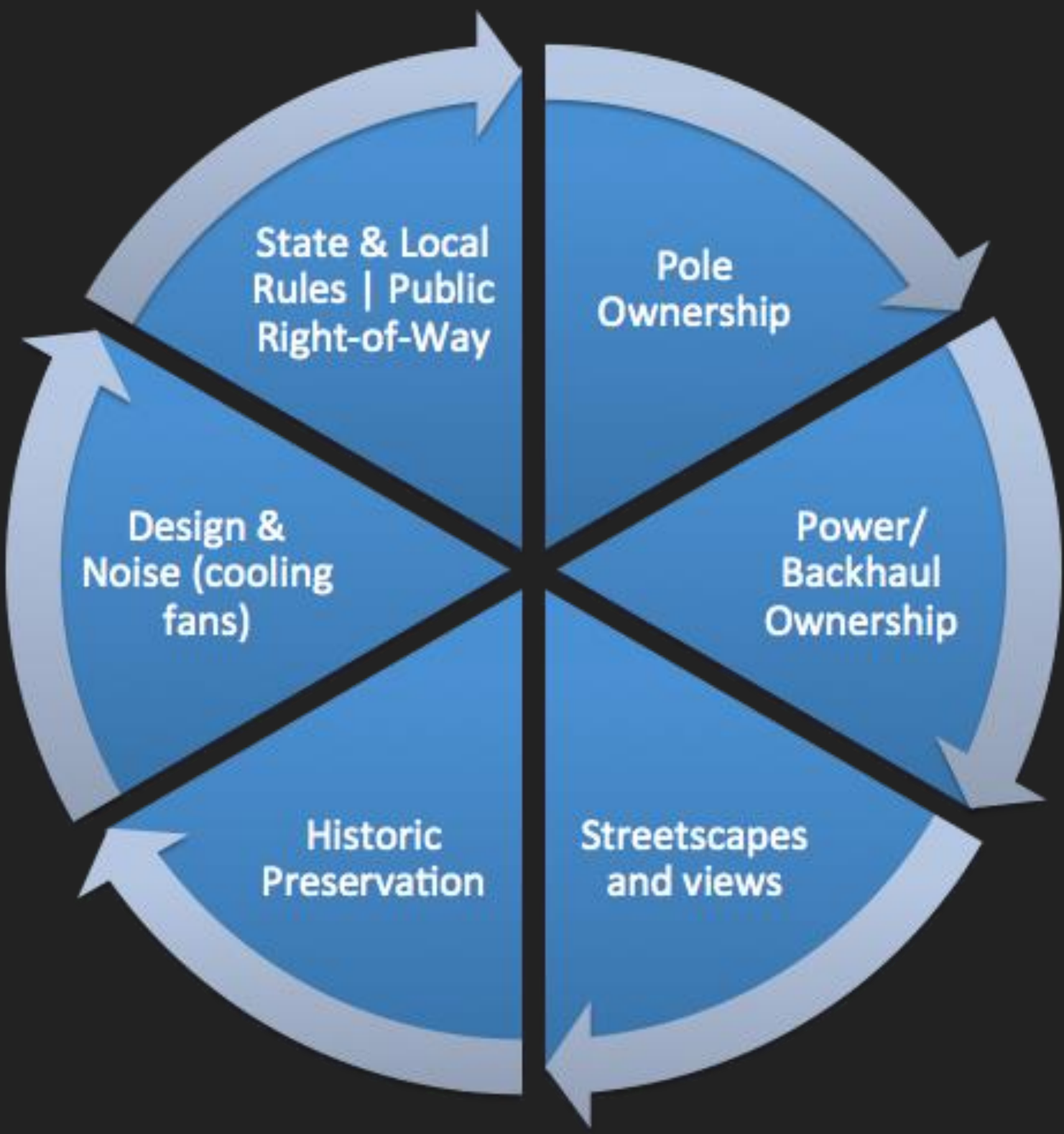
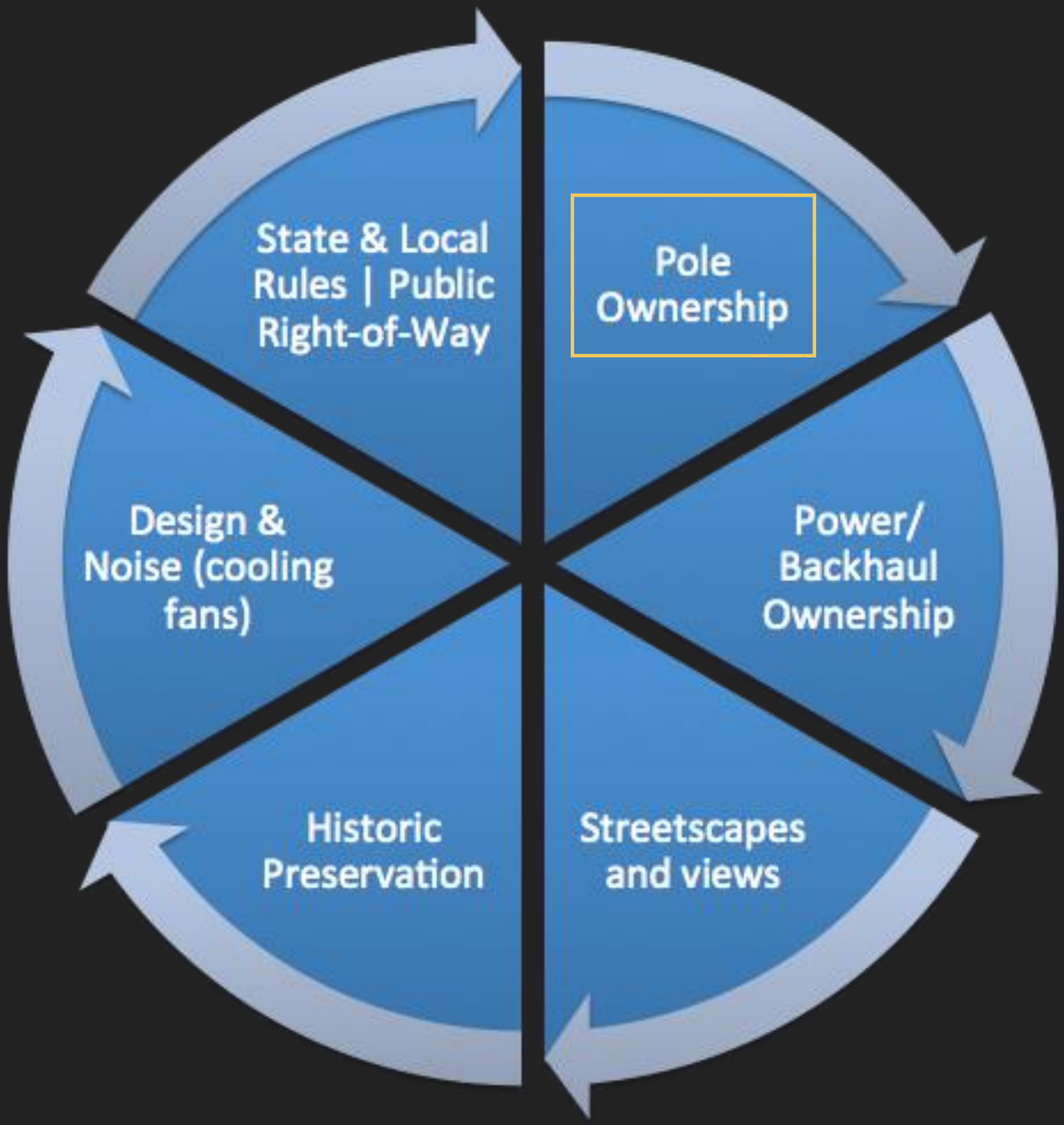
OMAR MASRY, AICP

ODAS & SMALL CELLS FROM A CITY PLANNER'S

CHALLENGES FOR ODAS & SM

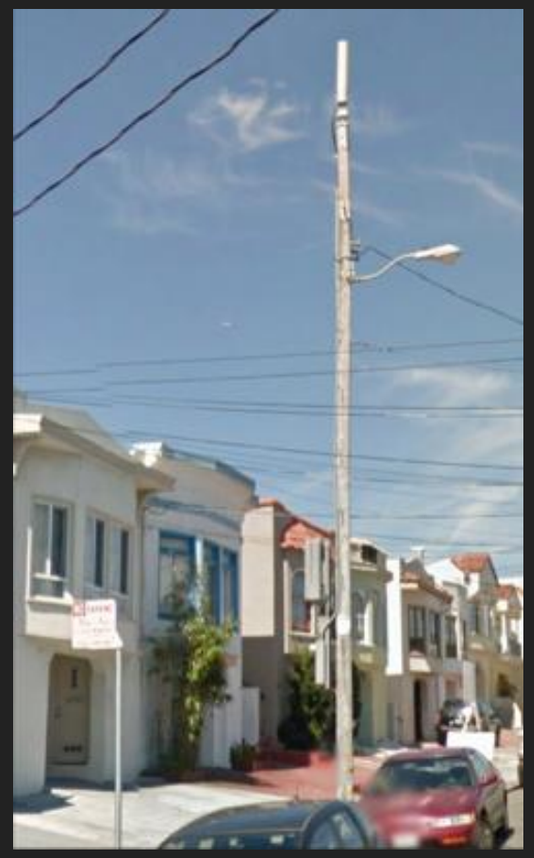


CHALLENGES FOR ODAS & SM

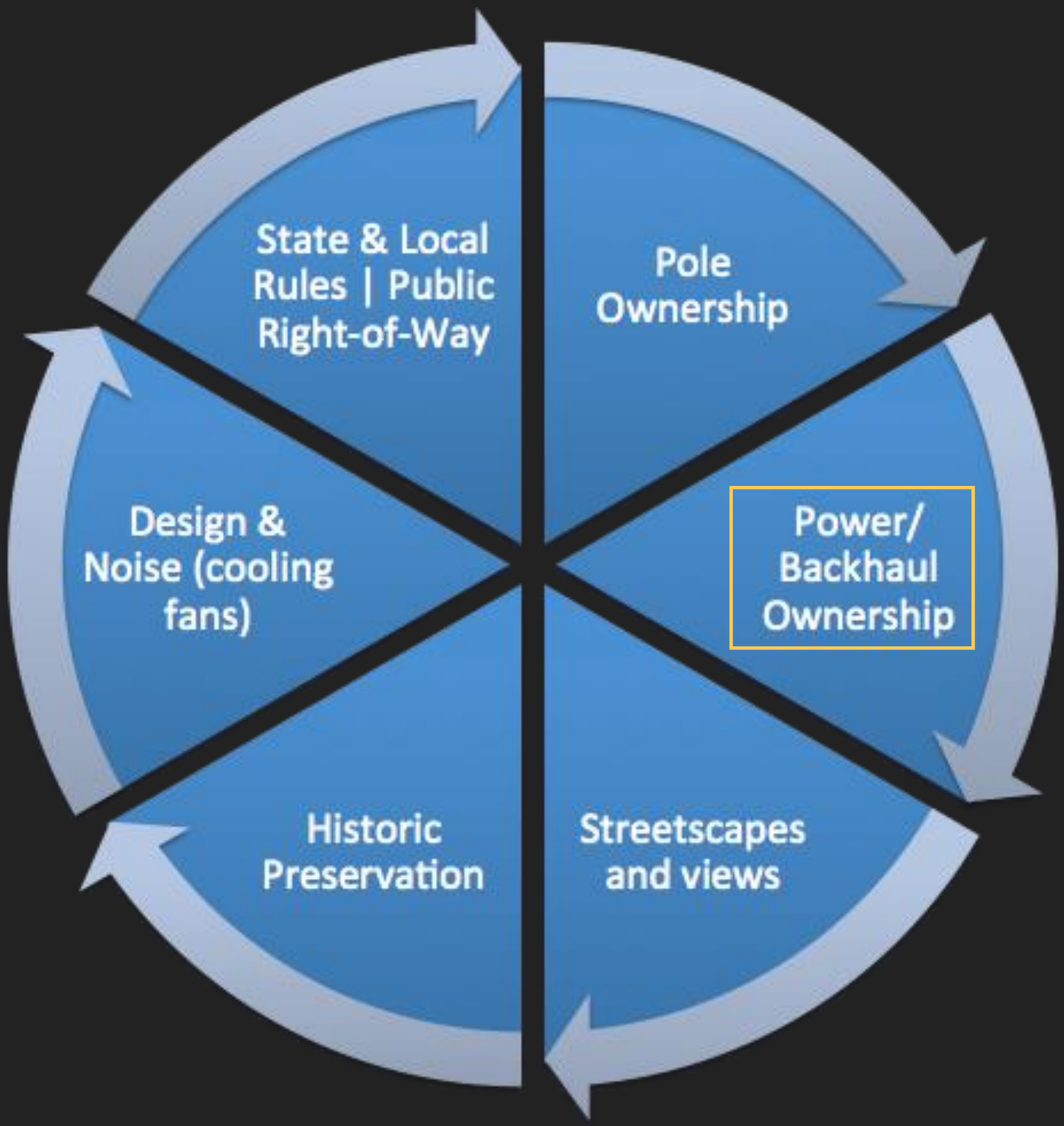


Some poles may be owned by the City while others may be owned by Investor-Owned Utility

IOU may be less flexible on replacing wood poles w/ steel, or connecting new steel poles to aerial power from nearby wood poles



CHALLENGES FOR ODAS & SM

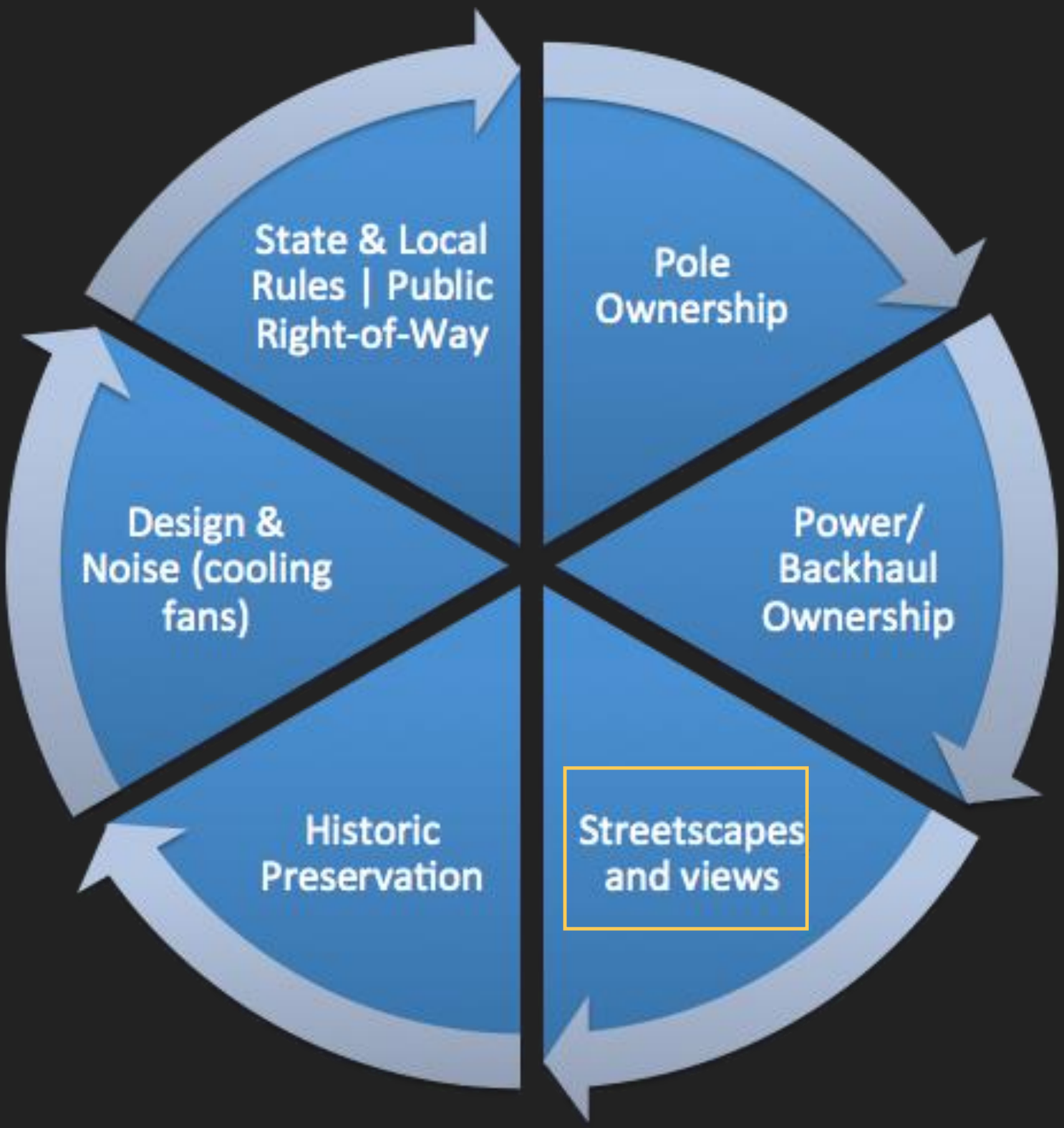


Conduit may not be sufficient to accommodate power & fiber

City may not have conduit

Microtrenching may not be allowed

CHALLENGES FOR ODAS & SM



Context Matters

Too many designs often too bulky/large for streetscape

CROWN CASTLE FOR VERIZON WIRELESS “ODAS XL” FACILITIES (RICHMOND/SUNSET)

DISFAVORED

AVOIDING LARGE EQUIPMENT CABINETS (WITH NOISY COOLING FANS) OUTSIDE ~~BEDROOM~~ WINDOWS

DISFAVORED

AVOIDING LARGE EQUIPMENT CABINETS (WITH NOISY COOLING FANS) OUTSIDE ~~BEDROOM~~ WINDOWS

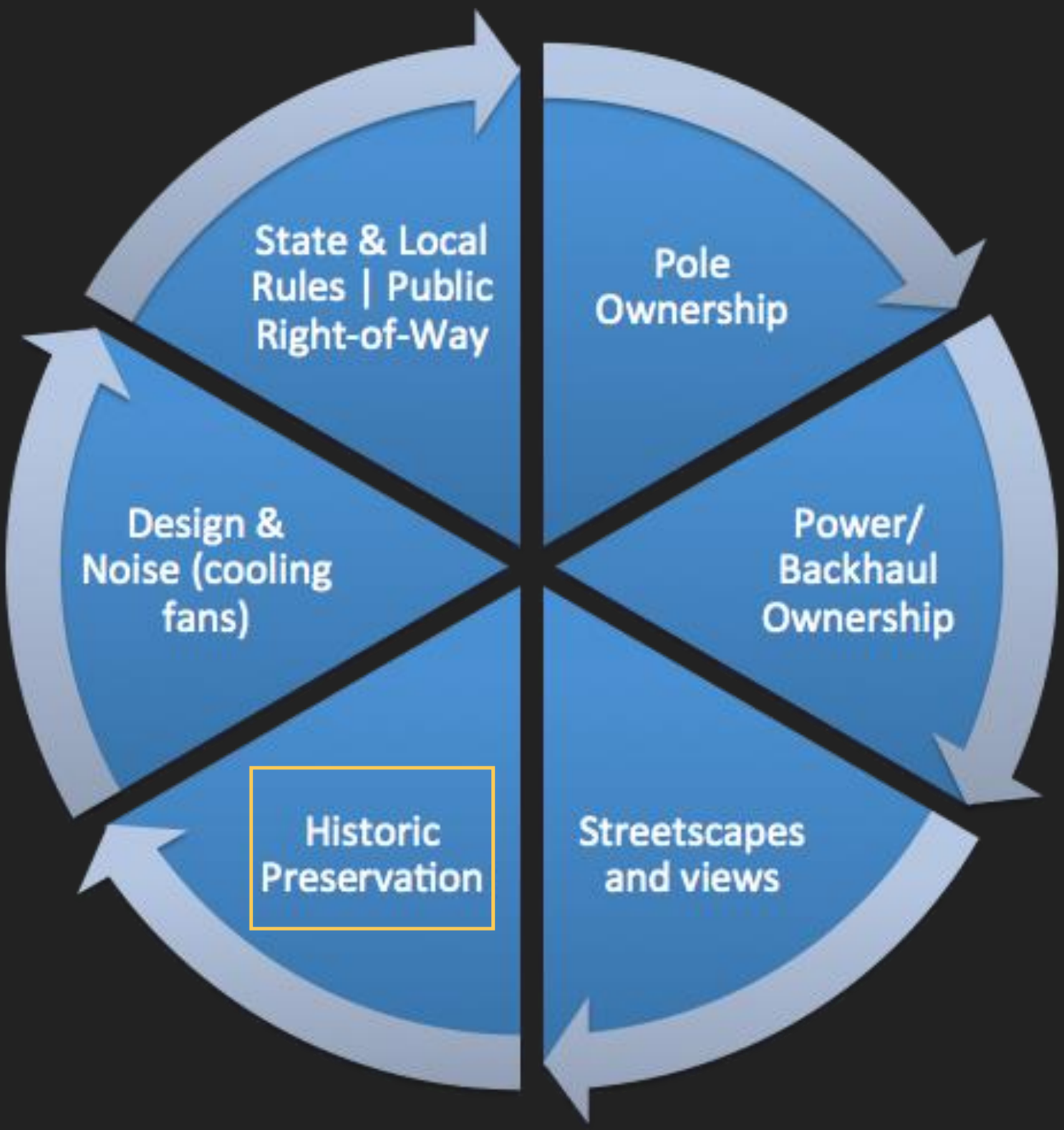
(NOT IN SAN FRANCISCO)
BATTERY CABINETS & COMPUTERS SUPPORTING ANTENNAS ON TOP OF

CROWN CASTLE FOR VERIZON WIRELESS “ODAS XL” FACILITIES (RICHMOND/SUNSET)

DISFAVORED

AVOIDING LARGE EQUIPMENT CABINETS (WITH NOISY COOLING FANS) OUTSIDE ~~BEDROOM~~ WINDOWS

CHALLENGES FOR ODAS & SM



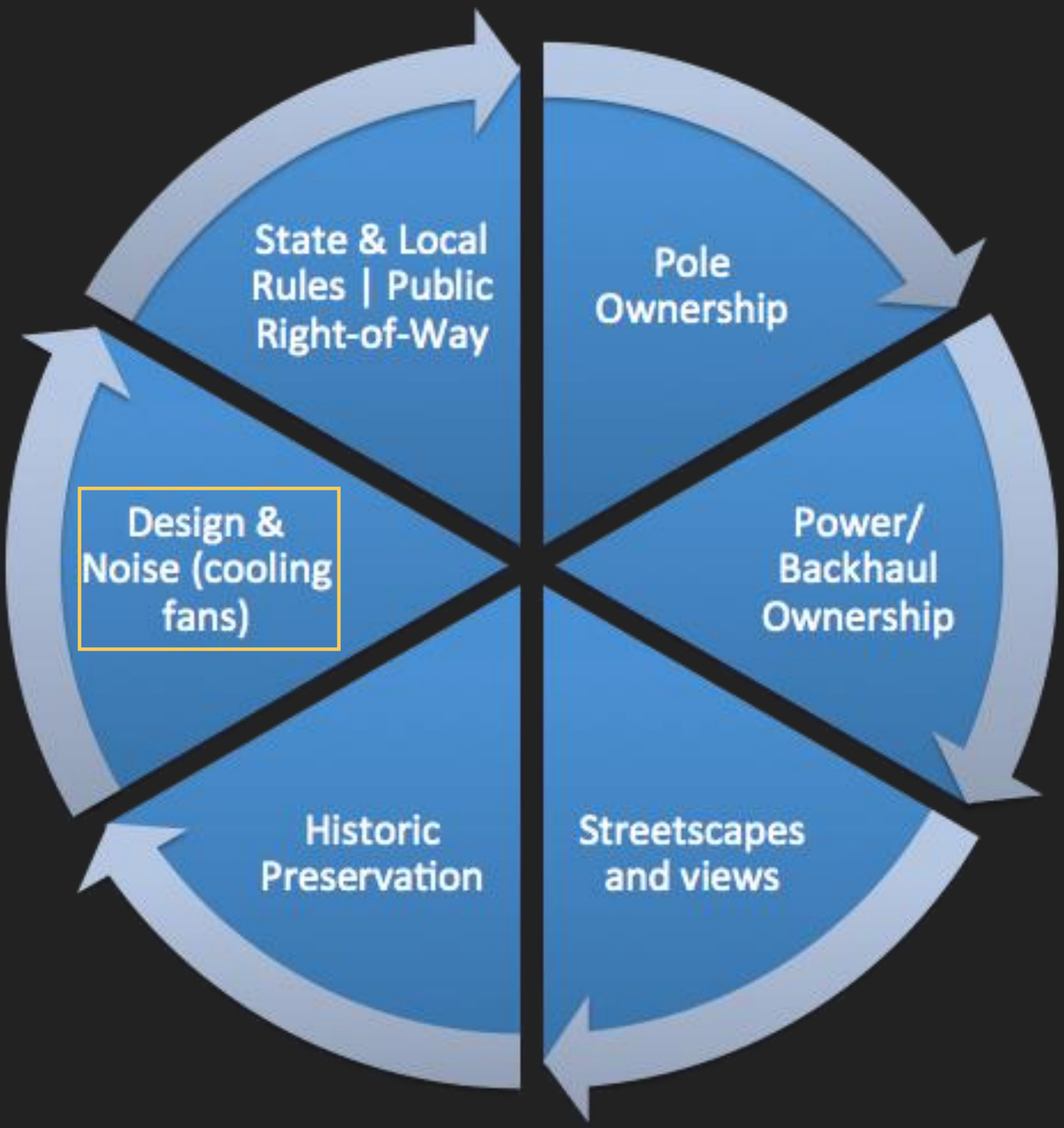
Many downtowns feature historic districts

Yes, Historic Preservation review applies to public right-of-way too.

Don’t dismiss local concerns or a streetscape that does not look nice right now.

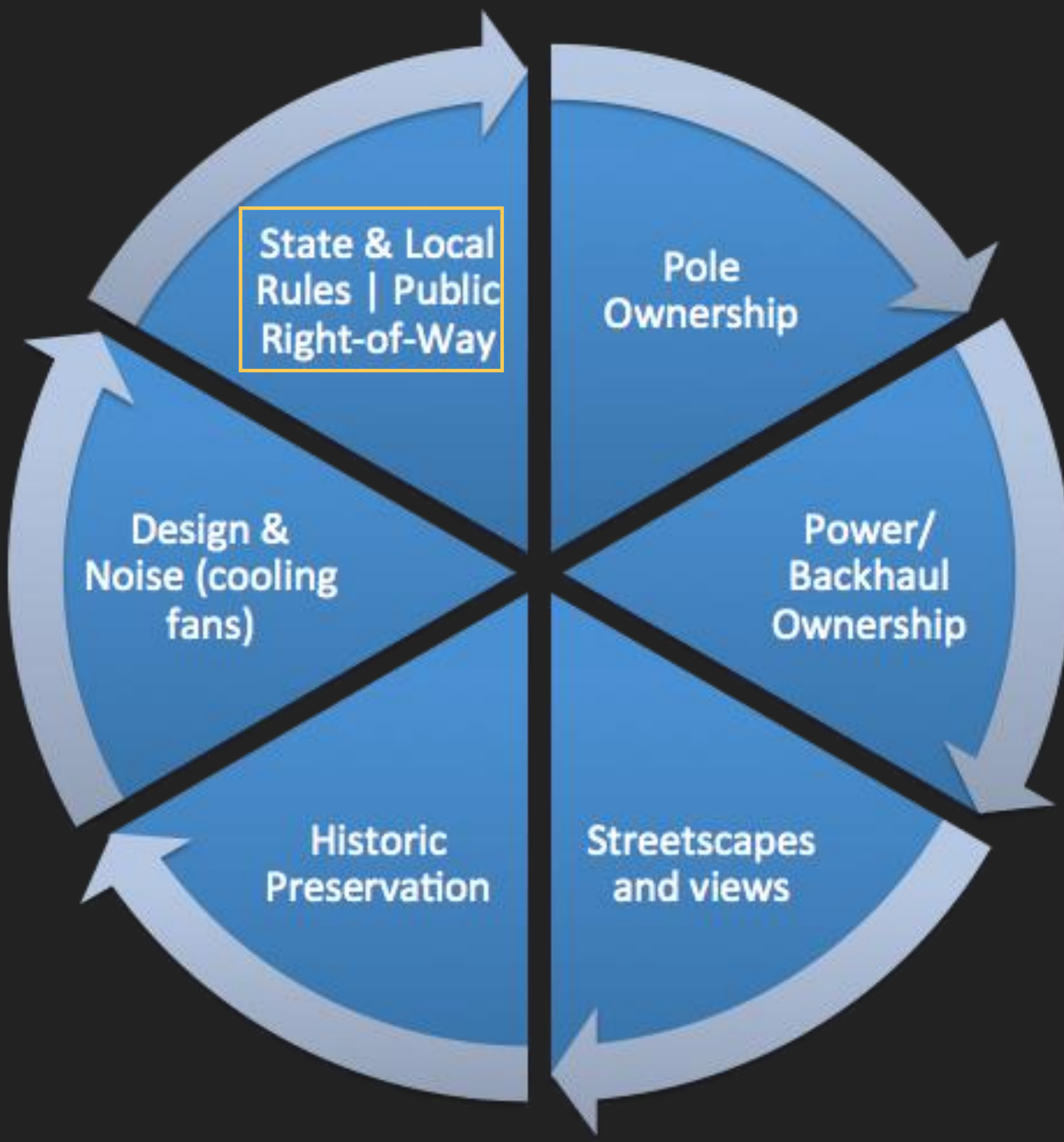
Cities take a long term view of future improvements and need to consider cumulative impacts (multiple carriers + FirstNet + Wi-Fi operators + maybe new entrants like Google using 3.5)

CHALLENGES FOR ODAS & SM



Noisy equipment next to bedroom windows is a problem

CHALLENGES FOR ODAS & SM

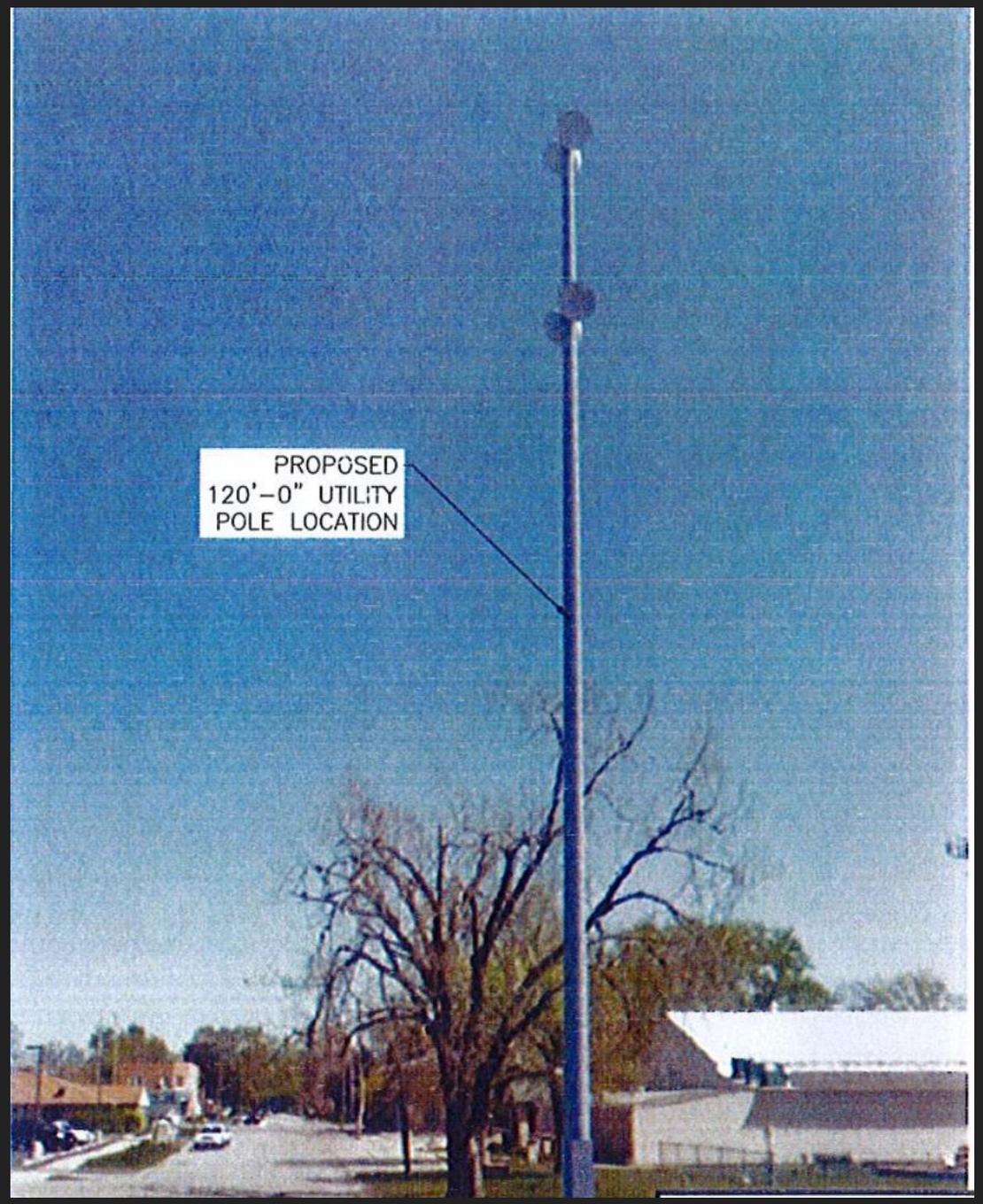


Wireless is not a traditional utility

Each State has very unique rules on right-of-way

Many cities may not have clear cut rules on wireless in right-of-way

Courts have continued to allow cities/counties SOME discretion (aesthetics, noise, historic, archeo) over wireless in the right-of-way)



DISFAVORED

LARGE & BULKY "ODAS XL" READS TO MANY AS A .....

"RENT-FREE (LAND) MINI MONOPOLE"

Recently denied 120 foot tall monopole, proposed in East Coast,
with microwave dishes
by Mobilitie (likely for Sprint)

1 OF 400 VERIZON SMALL CELLS ON SFPUC/ SFMTA (CITY OWNED) LIGHT/TRANSIT

“oDAS XL” for
AT&T Mobility on City-owned steel poles

Poles used to hold up electric bus/rail power lines

Disapproved - Too bulky & out of character with streets in the Marina & Haight Ashbury neighborhoods

Original Small Cell Proposal on City Poles by Extenet for Verizon Wireless.

extenet

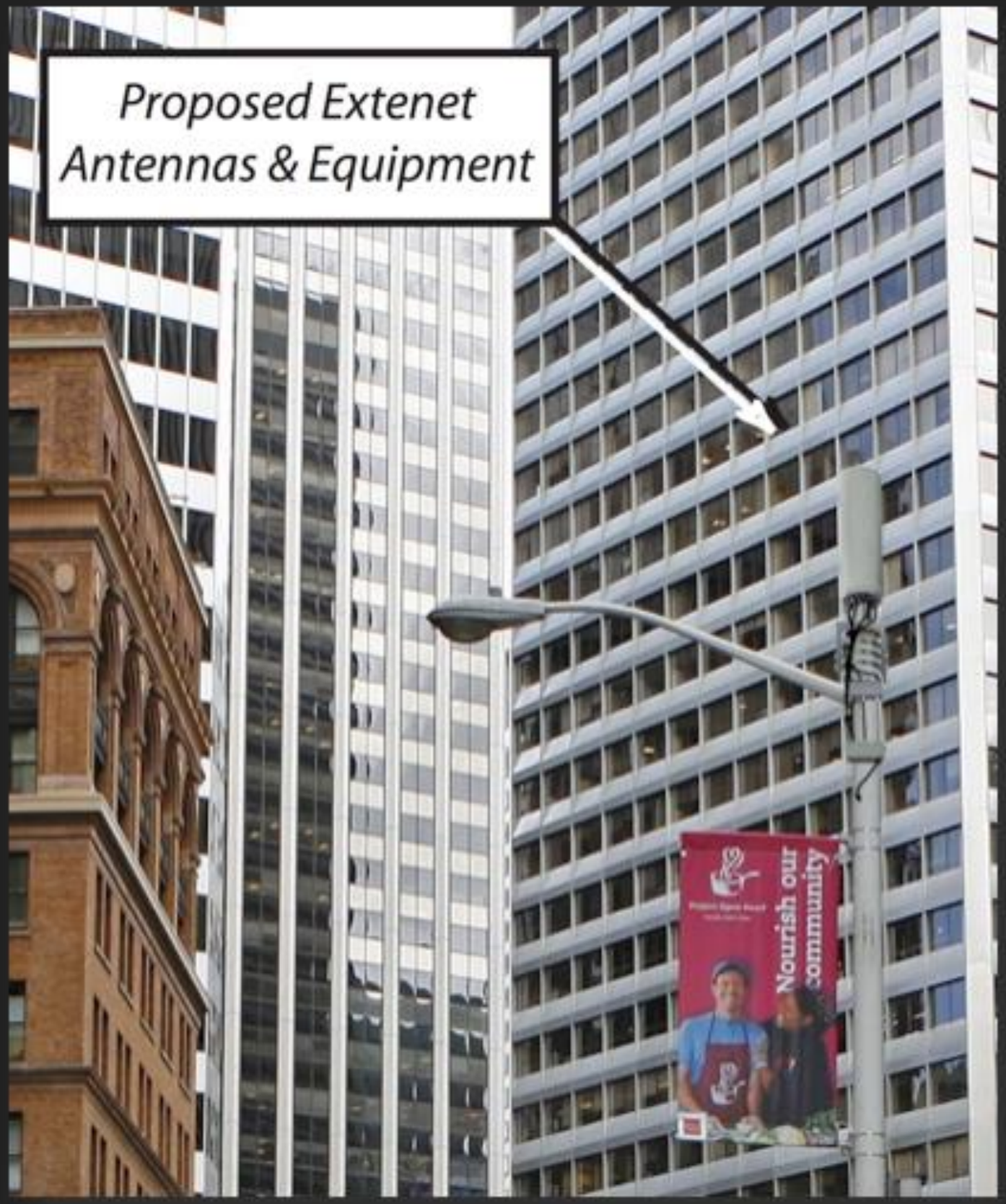
PUC9 / Steel Pole

San Francisco, CA

6/25/14

Applied Imagination 510.914.0500

Original Proposal by Extenet for Verizon | Design not Approved



Initial designs left out combiners & cabling

Design not supported by Planning

Initial mockup on standard steel tapered light pole owned by San Francisco Public Utilities Commission (SFPUC)

Initial mockup featured extra RF warning sticker (not required at this location) and cabling dropping substantially below each radio relay unit (computer)

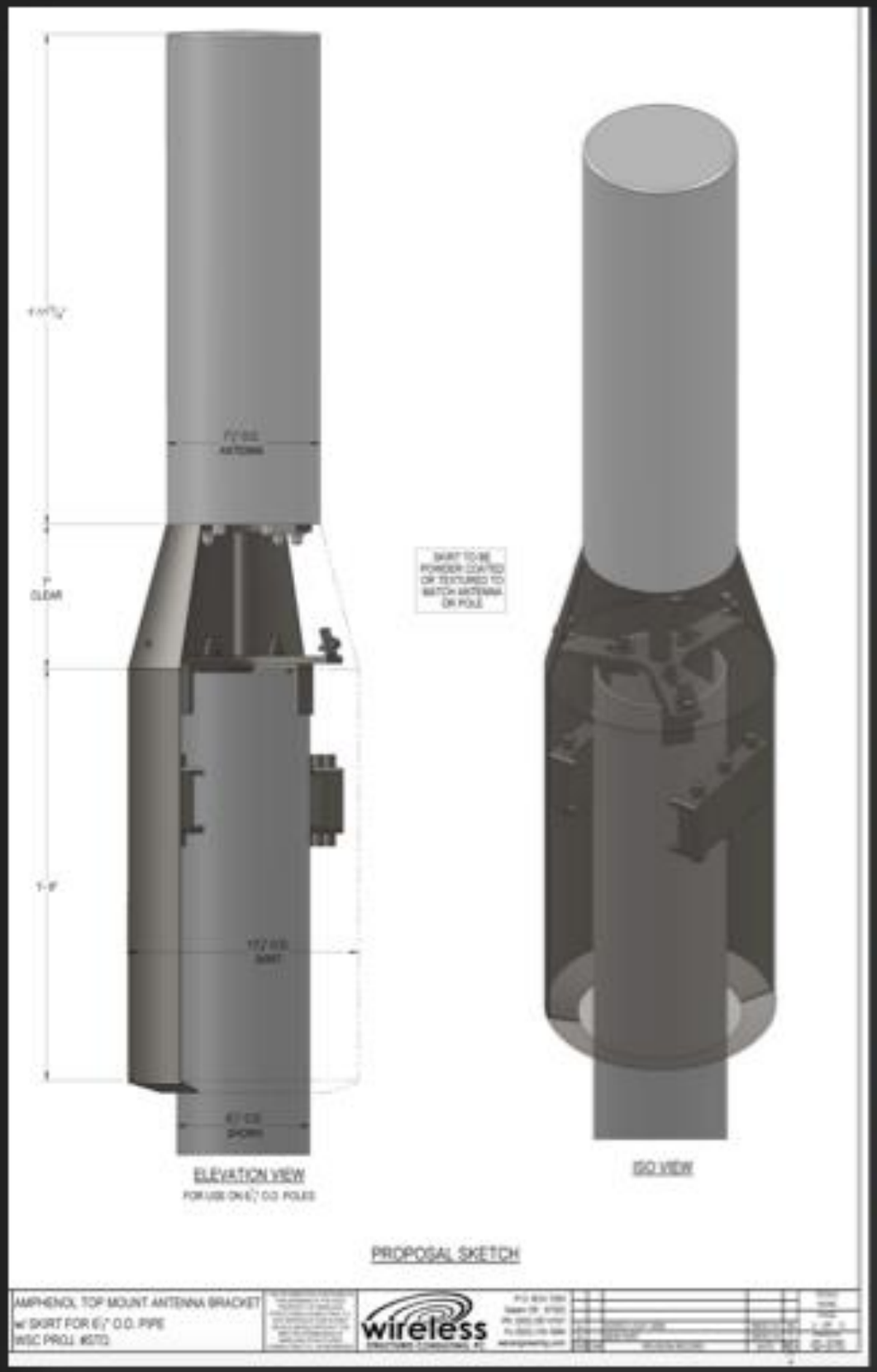
Design challenge:

Lack of rear-fed cabling option for Ericsson mRRUs on steel poles

Planning requested 90 degree connectors below

Carrier instead used super flex cabling

Result = more acceptable design (less visible cabling & less of a vandalism target)



Initial Mockup

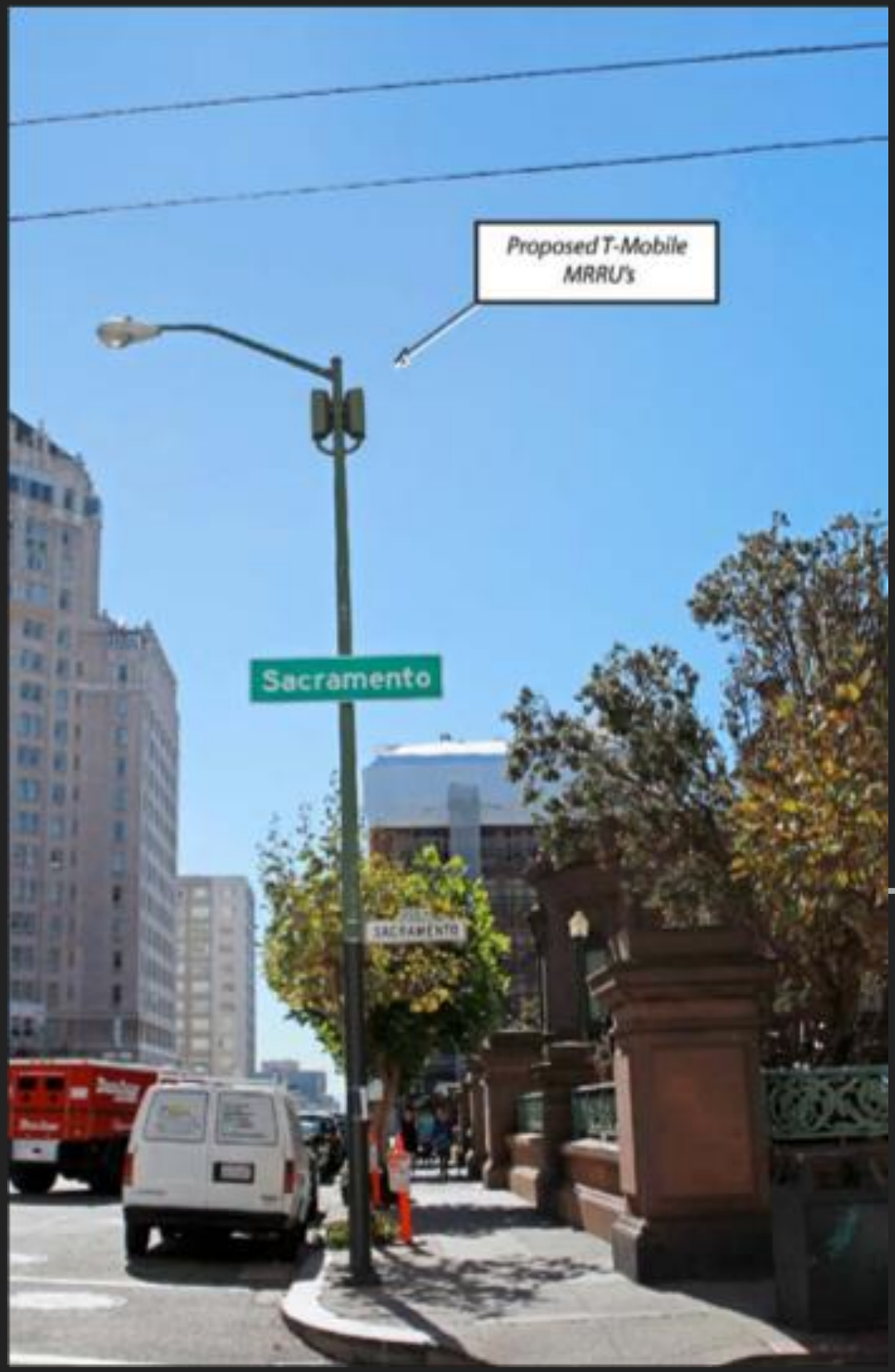
Special needs of pole owners (e.g. overhead lines)

ARC Attachment | Typical SFMTA Pole


Proposed Verizon
Antennas & Equipment

Planning
recommended
a bracket to place
road signage
in front of mRRUs

Other considerations for Small Cells on City-owned poles



APPROVED T-MOBILE SMALL CELL ON AN SFPUC ~~(CITY OWNED)~~ LIGHT POLE

extenet

PUC9 / Steel Pole

San Francisco, CA

6/25/14

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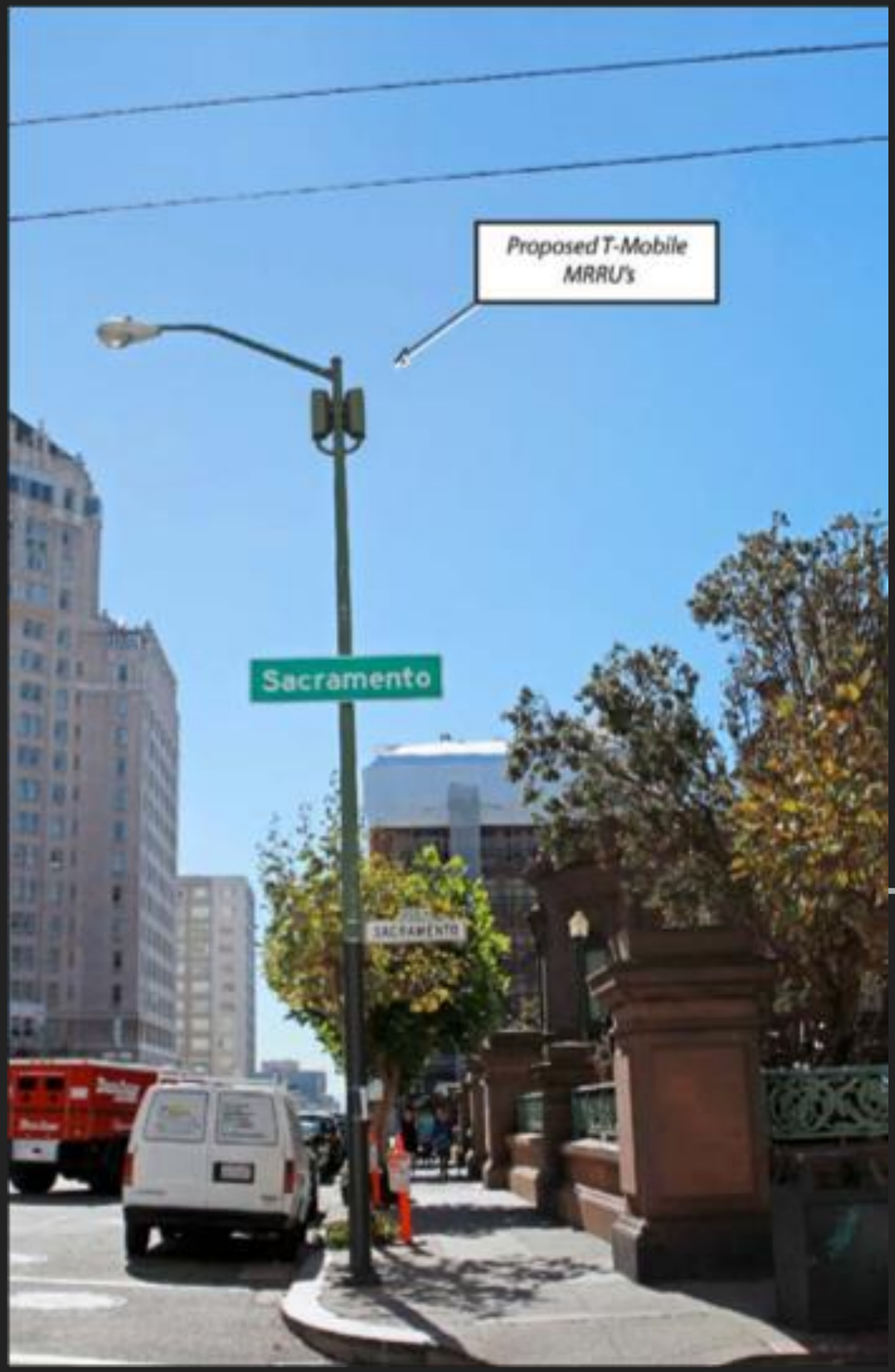


APPROVED T-MOBILE SMALL CELL ON AN SFPUC ~~(CITY OWNED)~~ LIGHT POLE

Carrier may need to use an external antenna and lower-mounted mRRUs on those poles with banners……

Faux vent pipes to screen antennas composed of a fiberglass-like element that still allows radio waves to pass through

view from Washington Street looking west at site

exfinet

MTAPOLY-VZW Node 221
1175 Washington Street, San Francisco, CA

Existing

Proposed

Original Design (wide electric meter, significant pole height increase carrier indicated was necessary to meet GO 95)

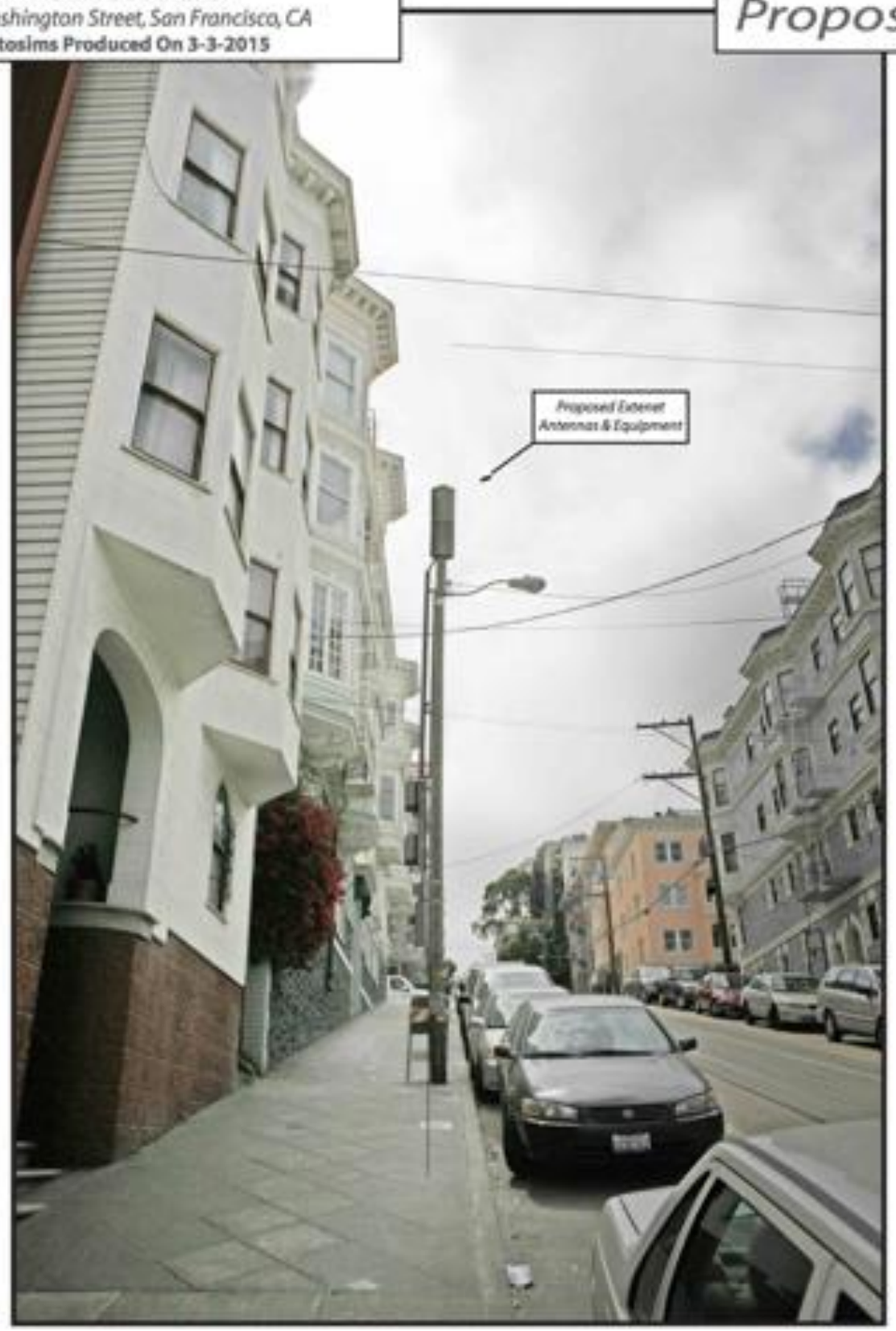
view from Washington Street looking west at site

extenet SYSTEMS

MTAPOLY-VZW Node 221
1175 Washington Street, San Francisco, CA
Photosims Produced On 3-3-2015

Existing

Proposed



Revised design (without significant pole height increase)…….. after initial denials by Planning

Initial electric meter design proposed by Extenet/Verizon

Revised meter found by Planning staff (though wireless metering preferred)

KEY CONSIDERATIONS

- Antenna & Equipment design
  - Consider pole type and placement of brackets & cabling
- Noise
  - can be problematic due to salt air on fan bearings, and noise near bedroom windows

KEY CONSIDERATION

- Bulk
  - Longer and narrower is generally better (even if slightly bigger)

Example TSi Power battery back up cabinet on a Crown Castle node

Narrower (“less-intrusive”) than “Alpha” brand cabinets & less likely to impair views from residences

KEY CONSIDERATIONS

- Stickers & Decals!
  - Remove excess.
    No RF warning sticker at ground level
    (near antenna only)
- Undergrounding districts

- Zoning | Will City treat Public Right of Way sites:
  - The same as locations on private property?
  - As a referral from Public Works to Planning?
  - Require public notification
    (especially for large “oDAS XL” nodes,
    or those close to residences & residential dwellings)?

T-Mobile oDAS
Disfavored Cabling/Stickers

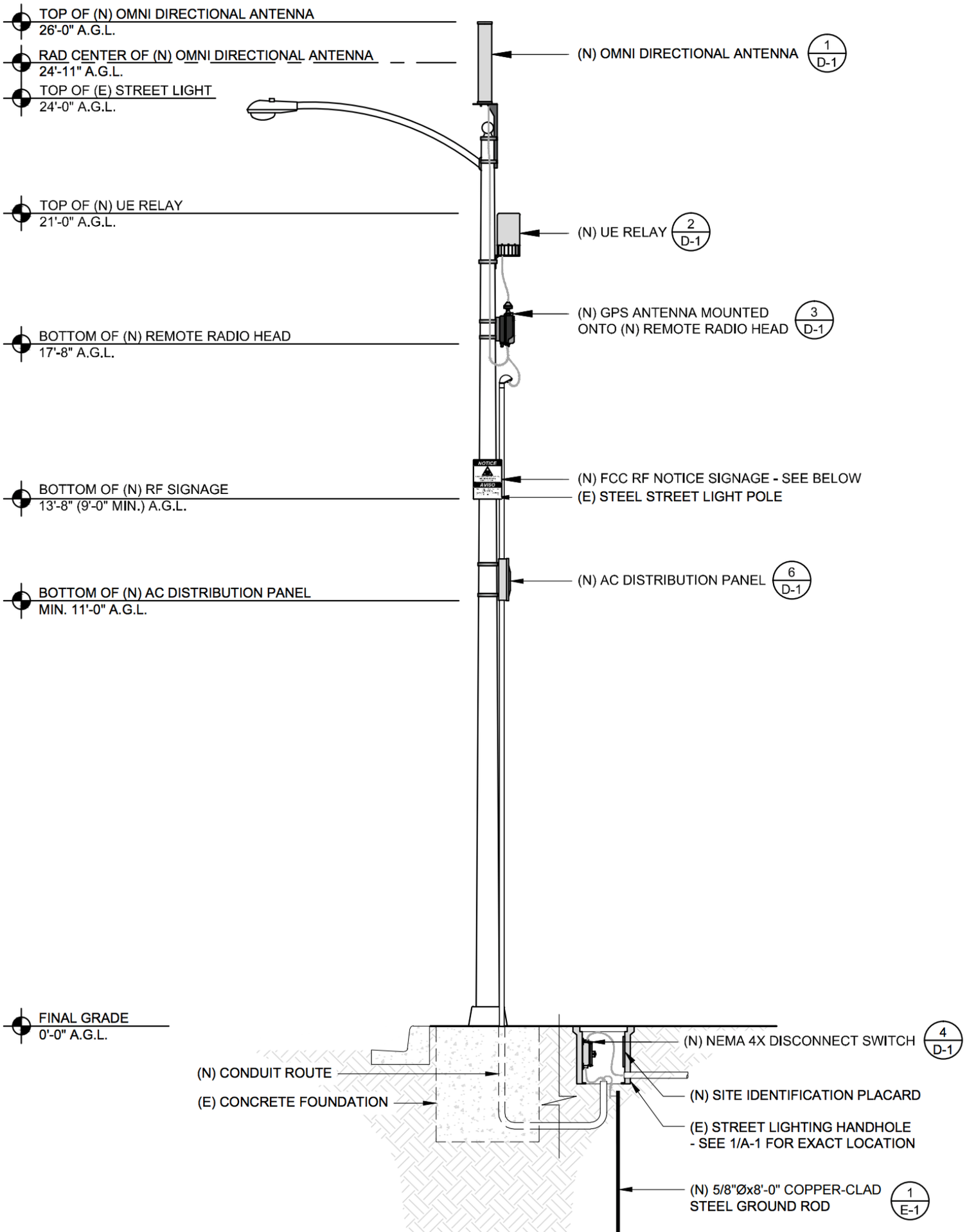
Next potential challenge for California cities/ counties…

Mobiltie potentially proposing Small Cells on brand new wooden poles in public right of way for Sprint.

Mobilitie doing business as the "California Utility Pole Authority"

Somewhat cluttered design recently proposed in various cities (e.g. Salem, MA)

Installation without required permits in
Prince Williams County Virginia
(in areas where other utilities are underground)



Proposed Mobilitie design
in Southern California

Concerns include:
- Antenna shrouding
- Equipment (AC Panel)
- Exposed fins
- Exterior Conduit
- GPS
- Loose cabling
- RF Signage (size of placard)

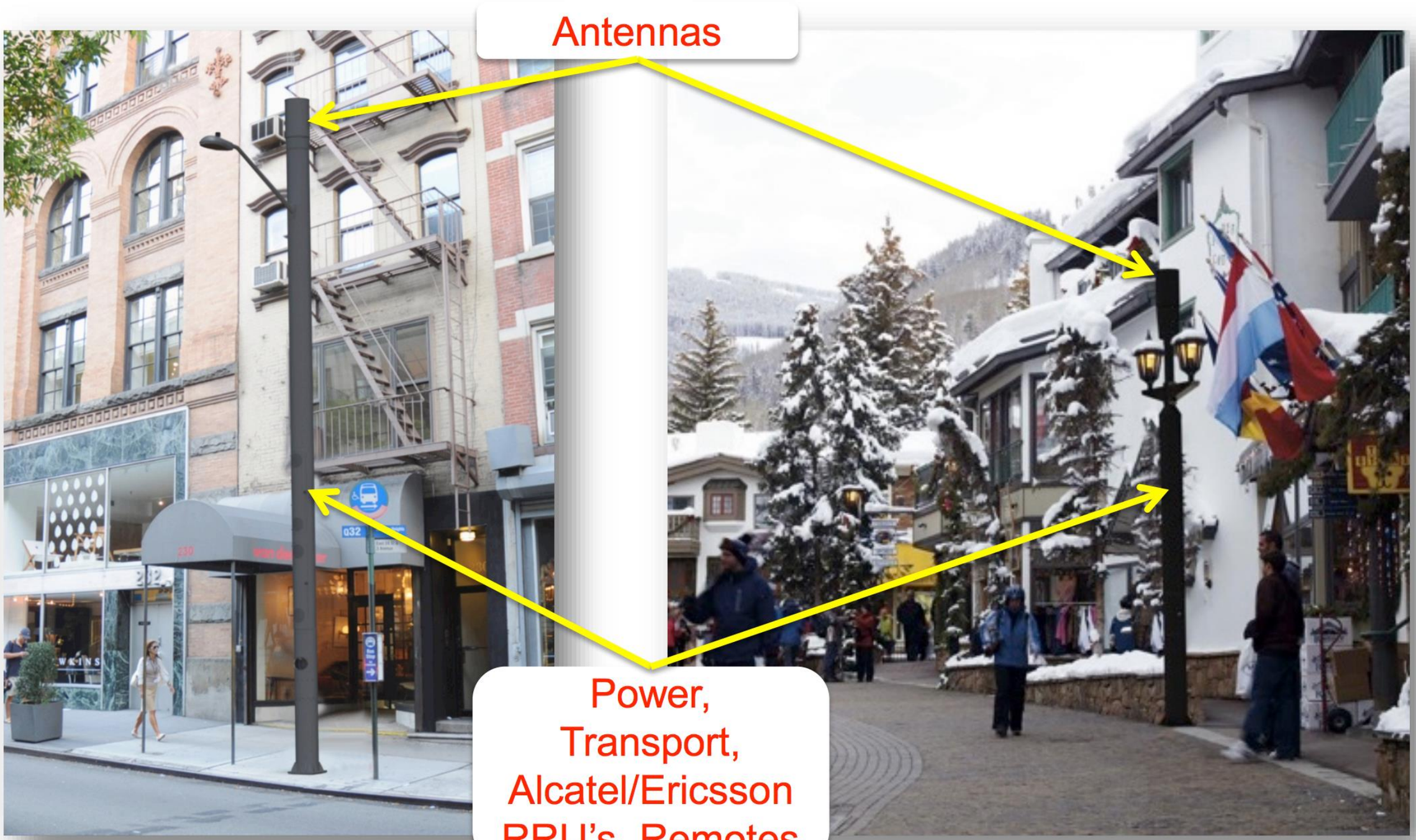
NEW POLES

KEY CONSIDERATIONS

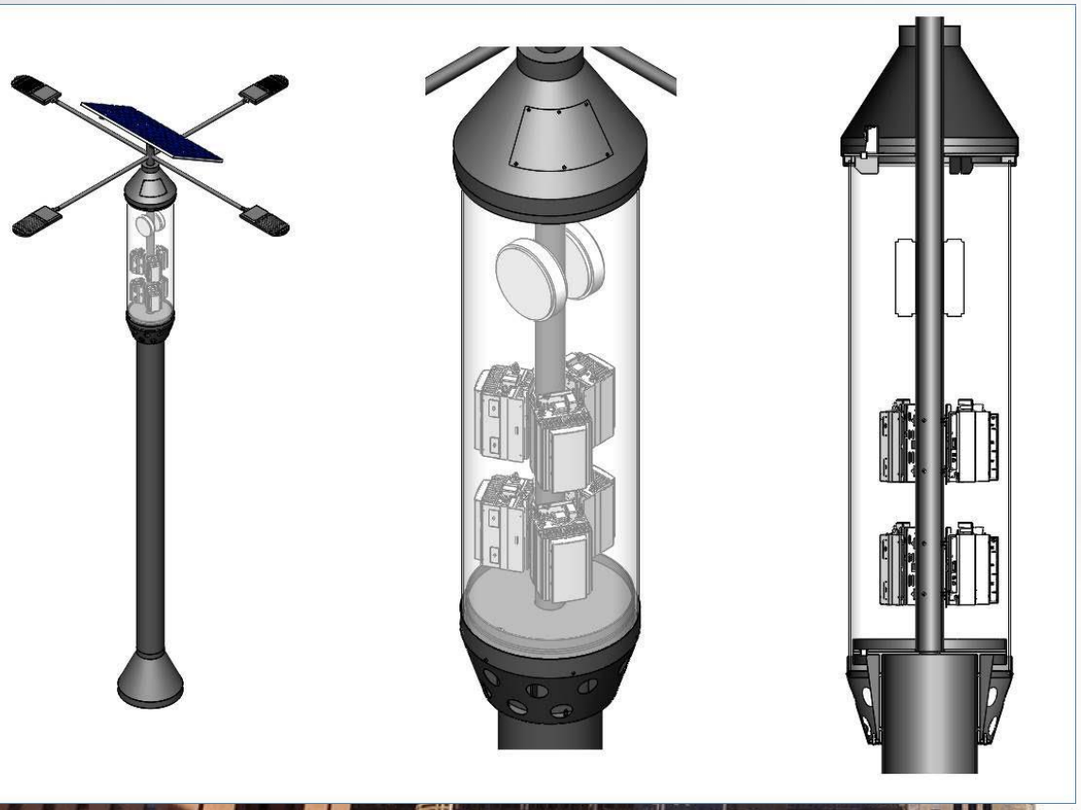
- Will City own it? Many advantages but may be awkward for agencies
- Power/Fiber
- Scale
  (many integrated poles too wide)
- Design compatibility with other poles & historic districts
- Are there future streetscapes upgrades for decorative or other poles
- Ground-mounted equipment impairing sidewalks

Phillips/Ericsson "ZeroSite" | Composite Pole with panel antennas inside and equipment in base | Considered too large for most small-scale streets

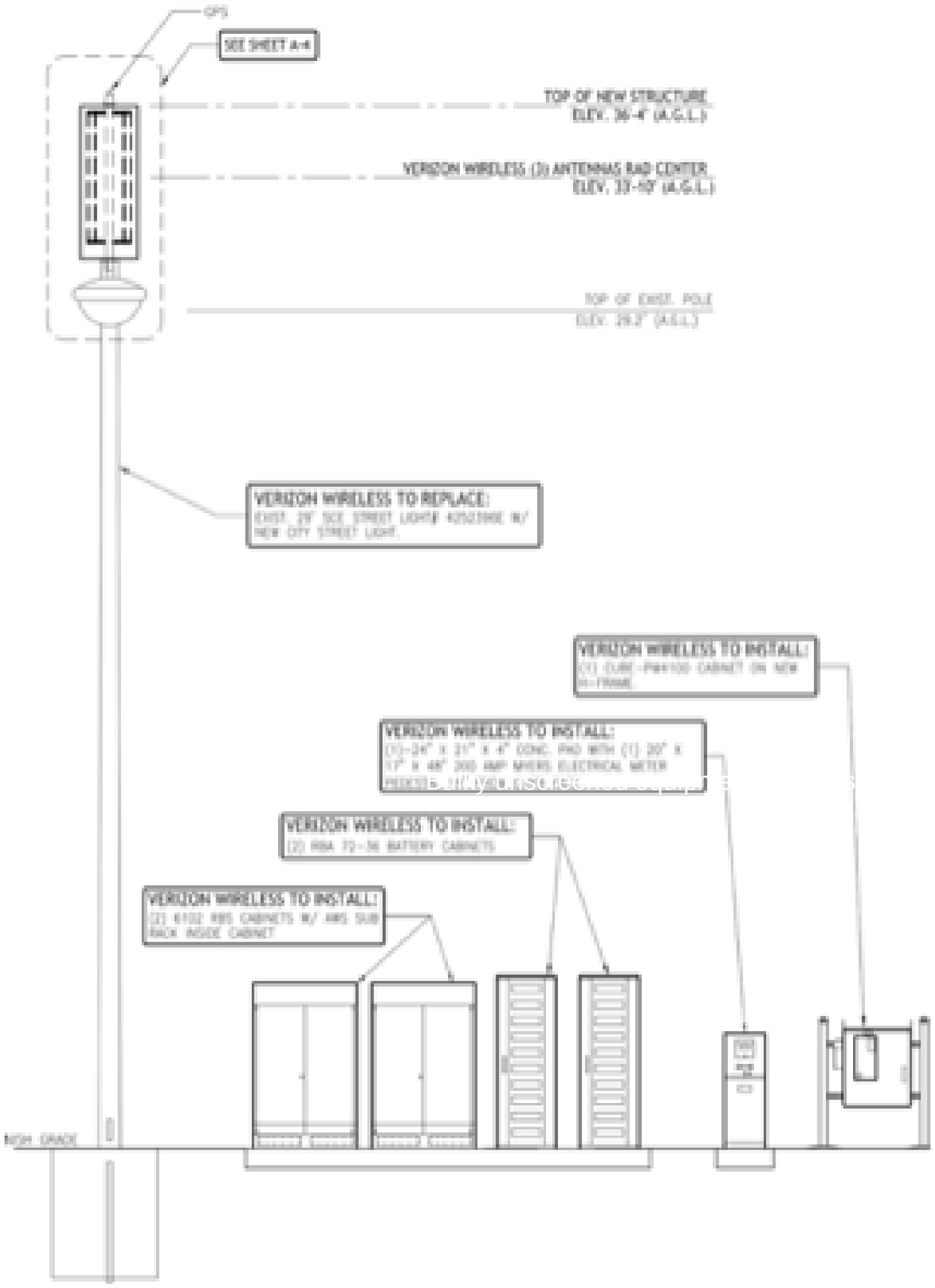
Multi-diameter and OEM agnostics SmartStack ™ Integrated Equipment Poles– Renders

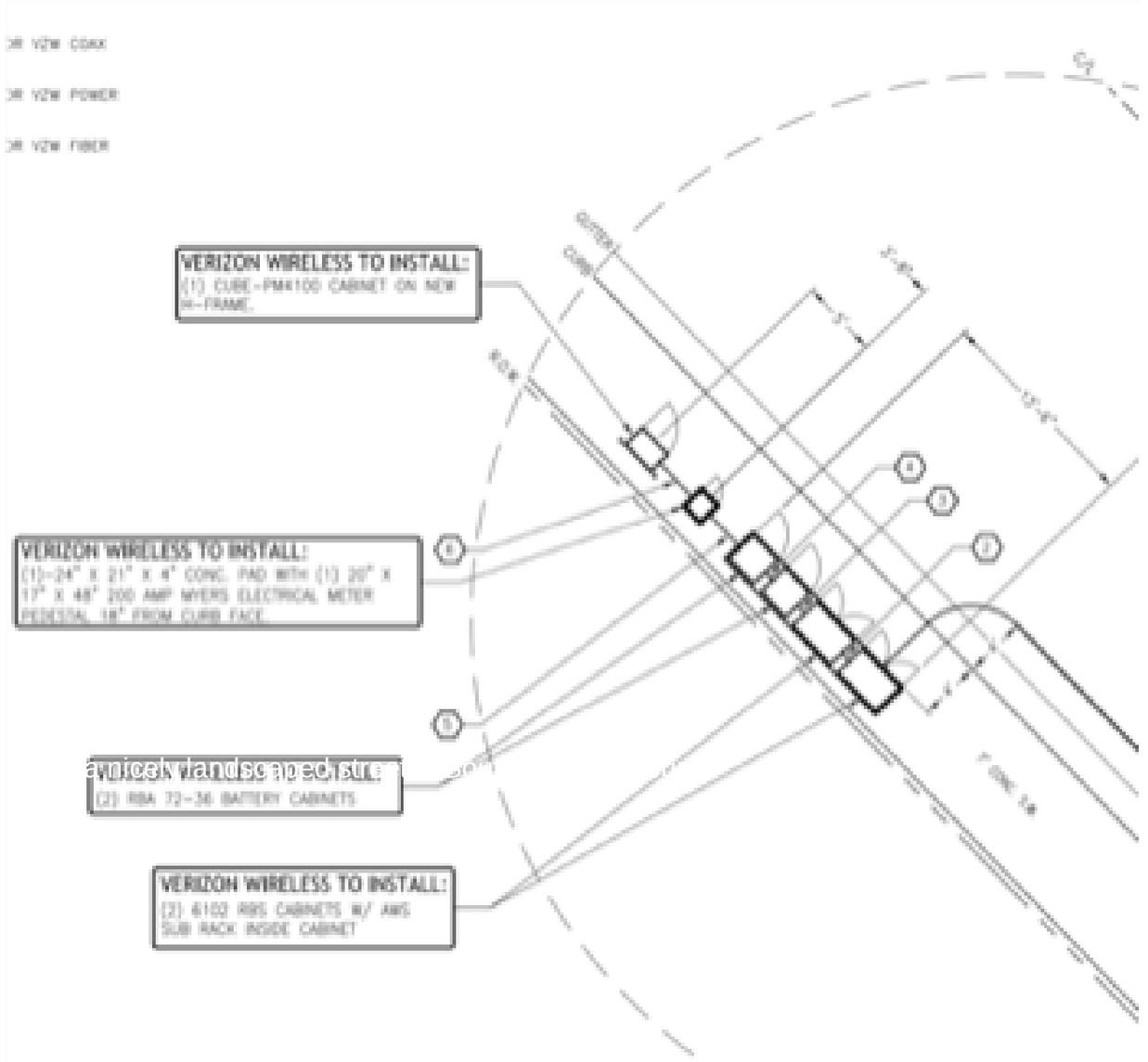


Small Cell Solution



CitiSite





Bulky unscreened equipment cabinets proposed along a nicely landscaped street in South Orange County

What was proposed by NextG (acquired by Crown Castle | New Street lights with antennas & equipment

What was actually built by NextG (acquired by Crown Castle | Antennas for Verizon Wireless & Sprint

CONCLUSION

KEY CONSIDERATIONS

- There is no one-size-fits all strategy
- Works with all stakeholders early on
  Power, fiber, pole owners, City, other gov. agencies
  existing contract holders for street furniture (bus shelters, kiosks)
- Create mockups
- Work with equipment manufacturers on COMPLETE
  designs that balance function with aesthetics, bulk, noise
- Quality control of contractors.
- Reputation matters. Cities/Counties have hundreds of pressing issues.
  Wireless is just one issue among many.

750+ rooftop Micro/Macros

Many new Macros are mostly relocations

700+ Small Cells/oDAS on wood & steel poles

Another 300 Small Cells/oDAS likely in next few years