

Small Cell Standards and Processes: Protecting Community Assets, Interests, and Public Safety

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Outline

- Constraints and opportunities posed by FCC Order
- Framing of technologies and implications
- Technical standards
- Aesthetic standards
- Cost analysis



CTC overview

- 35 years of experience in engineering, policy and business planning for government and nonprofits in the public interest
 - States, local governments, universities, public utilities, national organizations
- Independent of telecommunications carriers and cable industry
- Wide range of expertise
 - Fiber, wireless, public safety, public power engineering and planning
 - Developing and managing tower/wireless site application processes for government regulators
 - Policy advice to FCC, TVPPA, APPA, NLC/NACO/NATOA



CONSTRAINTS AND OPPORTUNITIES POSED BY FCC ORDER



Small cell Order – aesthetic and technical standards

- Standards must be:
 - Reasonable
 - No more burdensome than those applied to other types of infrastructure deployments
 - Objective and published in advance
- Not
 - Based on jurisdiction's assumptions about need for coverage
 - Using RF safety standards other than FCC's
 - Requiring use of government-operated fiber or DAS
 - Discriminating against particular providers or technology choices
 - So restrictive as to effectively prohibit deployment



Possible approaches

- Spacing, design/concealment, and placement standards (such as setbacks) centered on aesthetics
 - Ideally consistent with prior zoning and planning practices
 - Maintaining character of area (pole types, heights, cabinet and pedestal placement)
 - Consistent with industry practices (NESC, utility company standard practices, DOT standard practices)
 - Not ruling out deployment
- Build in flexibility for technological development and innovation



Small cell Order – fees

- The FCC establishes default non-recurring and recurring fees
 - Non-recurring fees (such as application reviews):
 - Up to \$500 for a single application that includes up to five small wireless facilities, with an additional \$100 fee for each small wireless facility beyond five
 - \$1,000 for an application to install a new pole (*i.e.*, not a collocation) that is intended to support one or more small wireless facilities
 - Recurring fees (such as annual attachment rates)
 - \$270 per small wireless facility per year for all recurring fees
 - This may also include right-of-way access fees



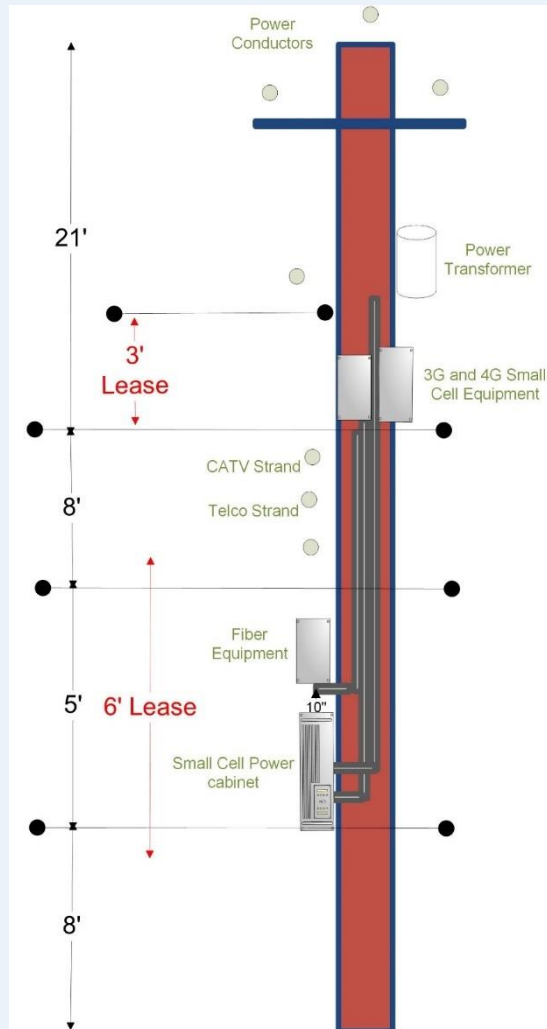
Small cell Order – fees

- A permitting authority (jurisdiction) could seek to establish different fees using the principles set forth in the Order
- Low fees put pressure on jurisdiction to have applicant do a more complete analysis and get application right the first time
 - Avoid high costs of multiple review iterations and overseeing and rectifying poor work by applicants



FRAMING OF TECHNOLOGIES AND IMPLICATIONS

Small cell attachments

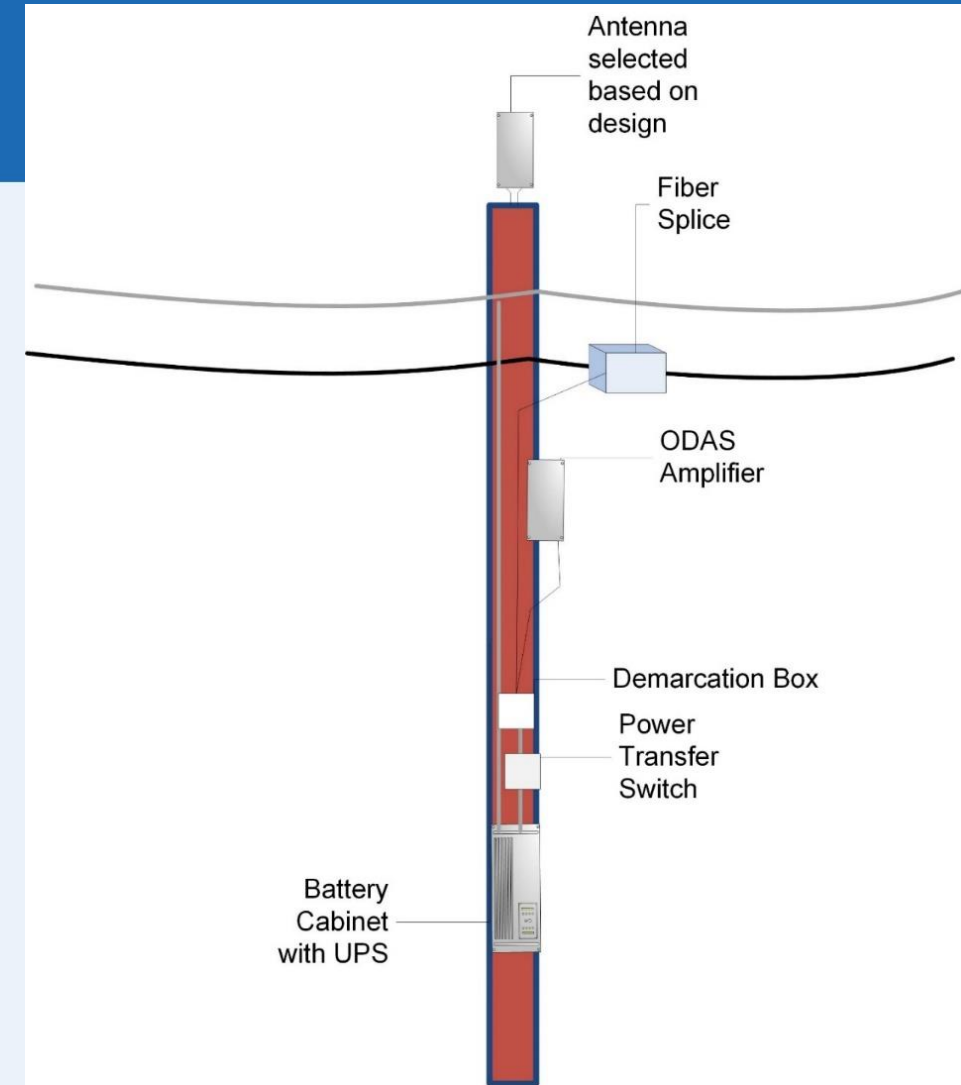


Four components of wireless attachments

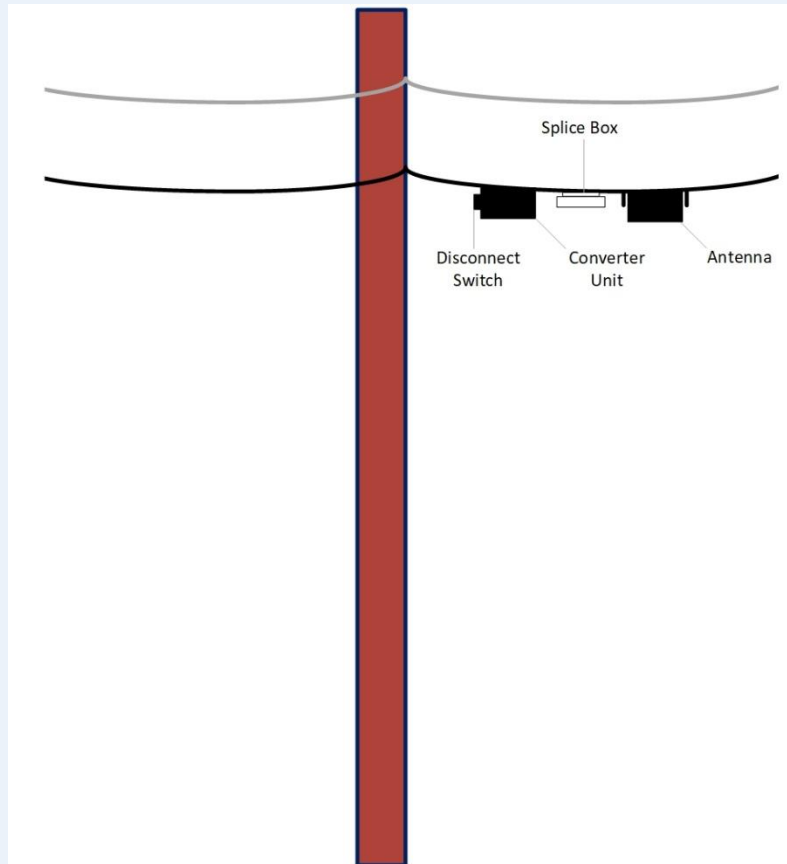
- Antennas
- Cabinet for equipment
- Backhaul
- Electricity

Small cell impact to poles

- Very different to wireline attachments
- Elements of small cells:
 - Space needed from top to bottom
 - Safety and interference considerations
 - Cabinets on poles
 - Fiber or wireless backhaul
 - Power and meter

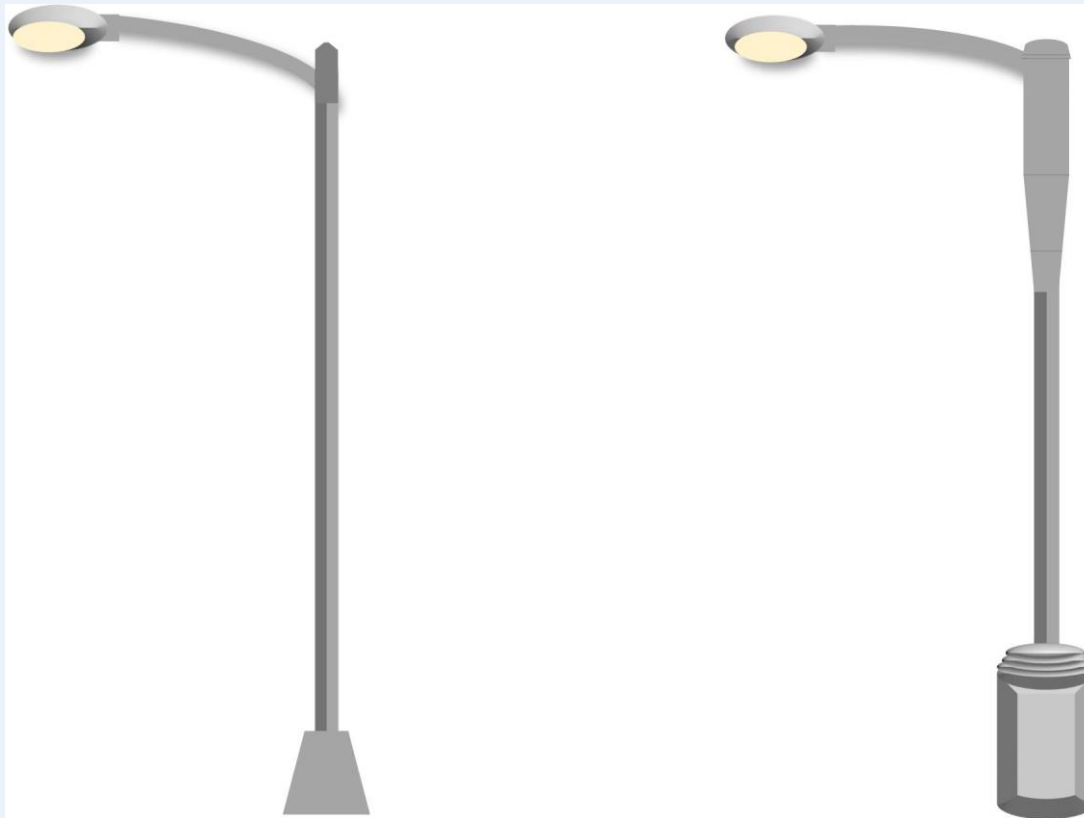


New strand-mounted version emerging



- Reduces pole crowding but adds to congestion in communications space
- Typically lower power than pole-mounted small cells
- Providers (e.g., Sprint, T-Mobile) have just started using them
- Usually on new strand attachment along with new provider fiber and power-conducting cable
- Powered from adjacent pole or through cable

Aesthetically focused approaches



Possible with collaborative input

Small cell placement





TECHNICAL STANDARDS



Technical standards and practices

- Many are responsibility of pole owner
 - Need standards for wooden poles (if muni utility) and light poles (if owned by jurisdiction)
 - Otherwise responsibility of utility
- When to replace poles
 - Options for light poles include
 - Requiring replacement
 - Requiring structural analysis
 - Replacement requirement is common for light poles
- Identify less favorable poles
 - Decorative lightweight poles
 - Congested traffic areas
- Backup power
 - Typically not proposed
 - If placed, typically similar to cable power supply batteries
 - Consider noise, lights, aesthetics



Technical standards and practices

- Power cutoff switch
- RF exposure
 - Bound by FCC rules for occupational and public
 - PE-signed review in application
 - Ability to follow up with test
- Reservation of space for municipal use (electrical, lighting, communications, public safety equipment)
- Cabinet weight
- Use of power meter or not

Technical standards and practices: Applicant submittal

- Location (address, GPS)
- Design drawings
 - Including ROW/property lines, streets, surroundings, pole classification/condition, clearances
- Pole owner (if not jurisdiction) and requirement to get their approval
- Backhaul and power connection
- RF compliance certification
- Structural analysis
- Equipment cut sheets
- Frequency bands

The screenshot displays a web application interface with a top navigation bar containing tabs: Stats, Applications, Sites, Intake, Site Survey, Pre-Engineering, Engineering (selected), RFI, and Report. The main content area is divided into several sections:

- Left Panel:** Fields for AppNo (201802-10), SiteID (624), SiteName (Damascus VFD 13), PropertyAddress, ColoNewMM (Colocation), Days Since Receipt (10), Applicant (Joshua Schakola), and Folder Link (Y:\Mc-Tower\Sites\624 Damasc).
- Engineering to Verify:** Fields for Application Description (Colocation), Co-Location Options, and Zone (CRT-1.75). There is a PROW checkbox and buttons for Recommendation and Clipboard.
- Milestone Completion Dates:** Fields for Intake (1/8/2018), Site Survey (1/10/2018), Engineering, App Complete, and Recmdtn Report.
- Table:** A table with columns: Type, Request Date, Requestor, Complete Date, Notes, and a Detail button. The rows are:
 - Eng_Review: 1/10/2018, Crystal Rowe, Complete Date is red, Notes empty, Detail button.
 - Intake Review: 1/8/2018, Crystal Rowe, Complete Date 1/8/2018, Notes empty, Detail button.
 - Pre-Eng: 1/8/2018, Crystal Rowe, Complete Date 1/9/2018, Notes "This is a co-location and a new site in our date", Detail button.
 - Site Survey: 1/8/2018, Crystal Rowe, Complete Date 1/10/2018, Notes empty, Detail button.
 - Empty row: 1/15/2018, empty, Complete Date empty, Notes empty, Detail button.



Technical standards and practices: Applicant submittal

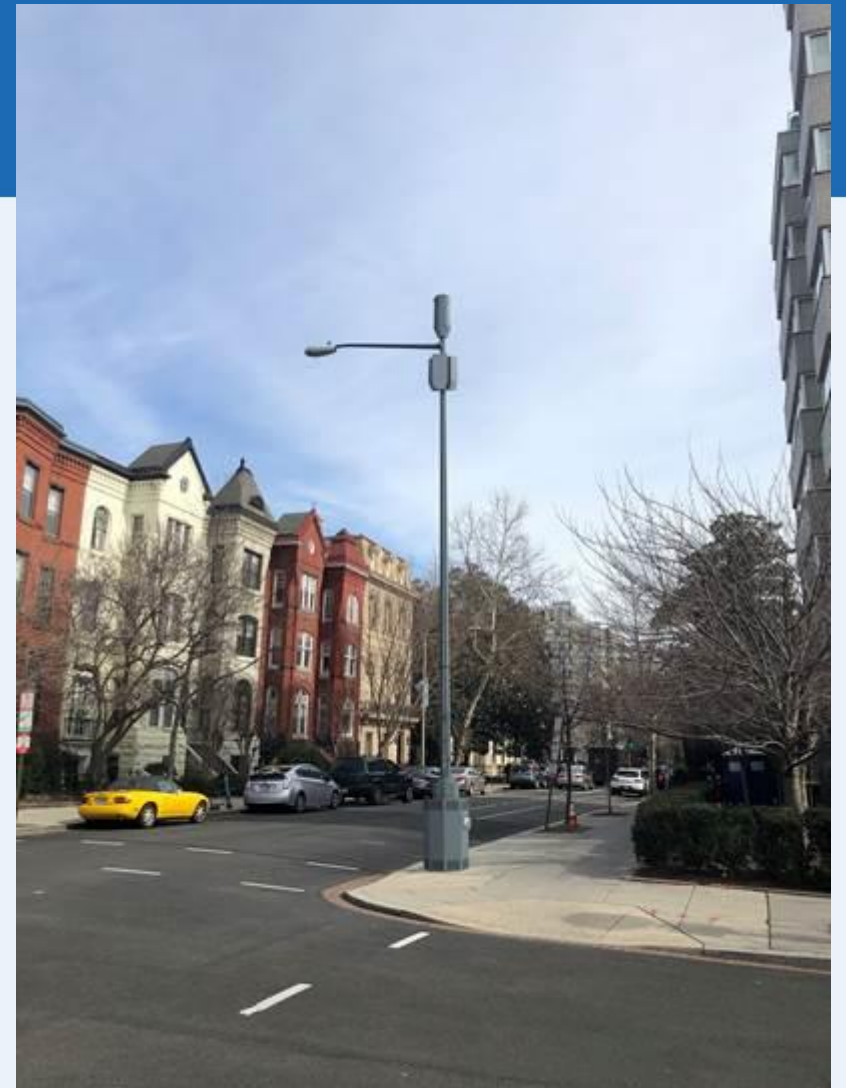
- Signal levels
- Antenna beam pattern
- Licensee of spectrum (end-customer)
- Backhaul provider and technology and demarcation
- Simulation photos
- PE certification (structural and RF)
- As-builts



AESTHETIC STANDARDS

Aesthetic standards

- Antenna size and shape
 - 3 cubic feet (per FCC order)
 - Antenna height
 - Panel and omni (and pseudo-omni)
 - Sheathing of antennas to create smooth pseudo-omni
 - Strategy for two-tiered millimeter-wave antennas





Aesthetic standards: Poles

- Applicants have significant flexibility in designing poles – jurisdiction can make requests
- In style or shape of existing light poles
- Limit of size
- Must use or replace existing poles, otherwise special permission
- Limit on height of new poles
- Any new poles also function as a light
- Cabinet as part of base (may result in wide pole)
- Pole diameter



Aesthetic standards: Spacing and placement

- Likely tradeoff between size of equipment and number of poles
- Consider a stated priority list
- Differences based on historic, residential, commercial, density, corridor
- Prefer location of larger poles in mixed pole-size area
- Prefer intersections (or not)
- Use of poles at property lines rather than directly in front of property
- Not in parks – or preferentially in parks
- Existing pedestal/cabinet “forests”



Aesthetic standards: Setback

- Consistency with existing requirements
- Consider proximity to windows of houses and businesses

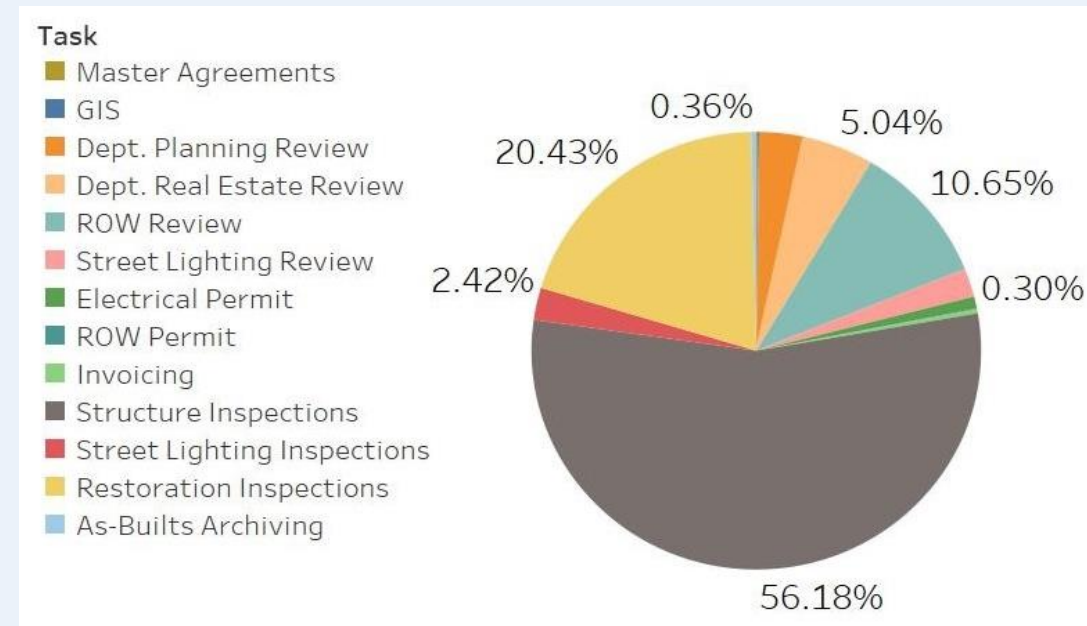


Aesthetic standards

- Cabinets on poles or surface slab
- Landscaping
- Color of cabinets
- Sheathing/camouflage
- Flush-mount equipment on pole
- Banners and signs
- Cables inside pole
- Locality-adopted smart pole

Developing a cost analysis

- If justification is requested by industry
- Recommend inventory of staff time
- Elements may differ based on community and process and pole ownership
 - Negotiating franchise/license agreement
 - Initial review for completeness/compliance of application
 - Developing requests for information/clarification of application
 - Review of application and information responses
 - May include structural review
 - ROW permitting, construction permitting, electrical permitting
 - Field survey
 - Public notification
 - Documentation (GIS, compiling as-builts)
 - Post-construction inspection (restoration, new pole installation)



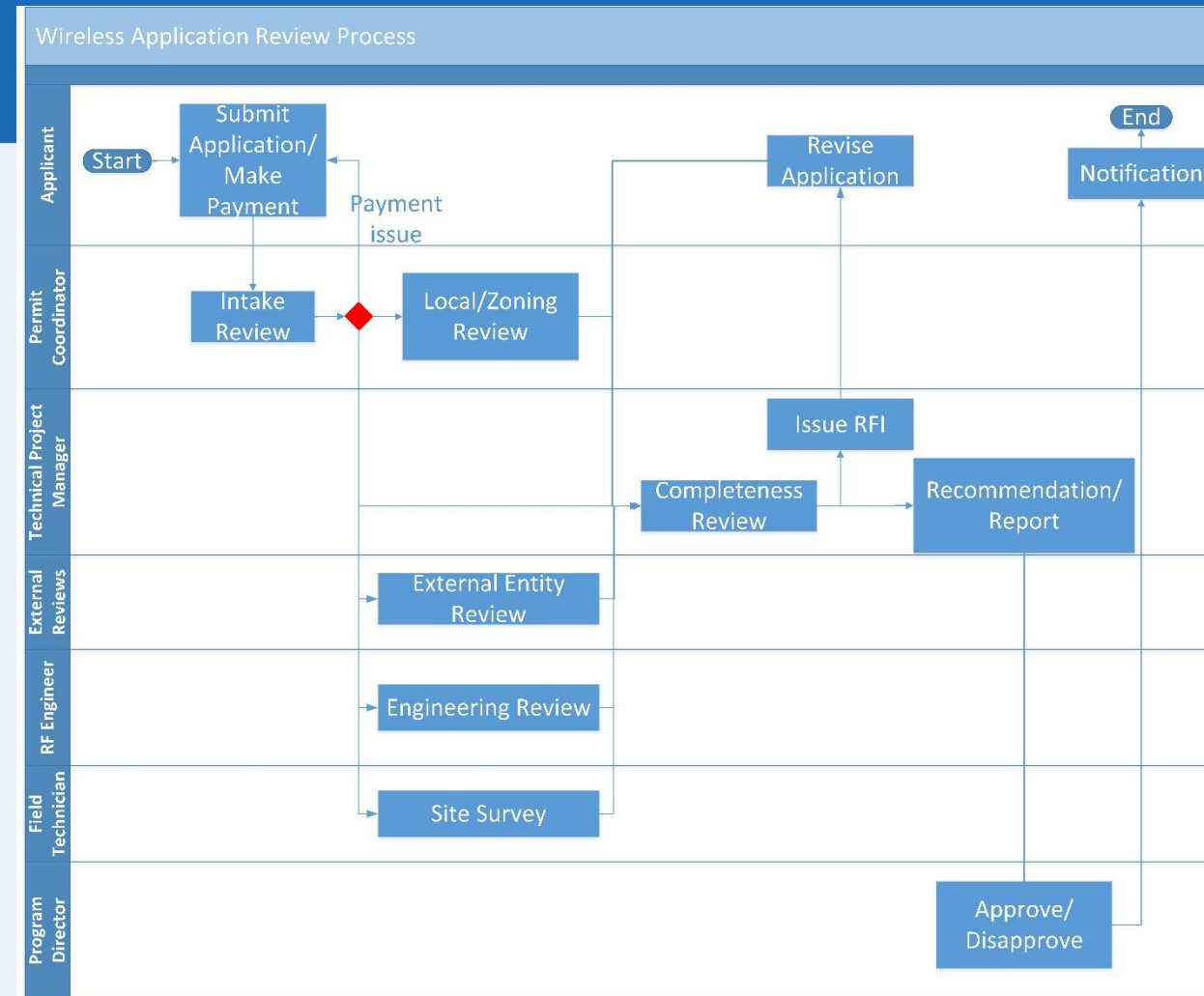


Potential strategies for addressing costs

- Requiring complete submittals
 - Minimizing re-work and handholding with applicants
 - Using uniform electronic application and portal
- Maximize analysis and engineering by applicant in application
 - Load analysis
- Quality control
 - Suspending problem contractors

Shot clock considerations

- Map all processes
- Track time of each process and each application
- Examine staffing and expertise needed for each step
- Prepare for high volume





Further resources at www.ctcnet.us/library

- Documenting the True—and High—Local Administrative Costs of Small Cell Siting
- The Three “Ps” of Managing Small Cell Applications: Process, Process, Process
- Ten Strategies to Protect State and Local Property After the FCC’s Small Cell Preemption Order
- Filing in response to FCC Draft Order