Public Facilities Committee Report

City of Newton
In City Council

Wednesday, February 21, 2018

Present: Councilors Crossley (Chair), Leary, Norton, Kelley, Danberg, Laredo

Also Present: Councilors Albright, Baker

City staff Present: Chief Operating Officer Jonathan Yeo, Associate City Solicitor Alan Mandl, Commissioner of Public Works Jim McGonagle, Associate City Engineer John Daghlian, Urban Designer Shubee Sikka

Referred to Public Facilities and Finance Committees

#155-18 **Appropriate $500,000 for snow and ice removal expenses**

HER HONOR THE MAYOR requesting authorization to appropriate the sum of five hundred thousand dollars ($500,000) from Free Cash to supplement the Department of Public Works' snow and ice operations budget.

Personnel Costs – Overtime
(0140110-513001).....$150,000
Rental Vehicles
(0140110-5273-5273) $350,000

Action: **Public Facilities Approved 5-0 (Councilor Norton not**

Note: Commissioner of Public Works Jim McGonagle presented the request to appropriate $500,000 for snow and ice removal. He stated that there have been 12 snow events totaling 42" of snow. Historically the cost of snow has been approximately $100,000 per inch. The Commissioner noted that this year, $3.985 dollars has been spent on snow and ice removal, slightly less than average. Councilor Danberg moved approval of the item which carried unanimously.

Chairs Note: Bryan Hopkins of CommTract joined the Committee to present "Wireless 101" including the basic elements of concern to the City Council regarding regulating grants of location on poles in the public way.

Note: Comm-Tract President Bryan Hopkins presented an introduction to Wireless Telecommunication networks. The City selected Comm-Tract as a consultant to provide expertise on draft Ordinances and design guidelines for wireless telecommunication equipment. Comm-Tract is a telecommunication infrastructure company who has worked with the City in the past. In 2017 petitions for grants of location were filed to locate wireless telecommunication equipment attached to poles in

the public way. Questions were raised about how to regulate the new technology to avoid visual clutter, while recognizing the need and requirements to provide continued coverage. The carrier with pending grants of location agreed to a set of conditions, however the Committee realized the need to develop design guidelines for the location of telecommunication equipment and incorporate standards in the City's Design Guidelines. The Public Facilities created a Wireless Subcommittee composed of three Councilors (Crossley, Albright, Lappin), Atty. Alan Mandl from the Law Department, IT Director Joe Mulvey and other staff members from Planning, Engineering, IT, the Law Department and the Fire Department. The subcommittee has met many times over the past year to work on draft regulations, design and prepared draft Ordinances.

Mr. Hopkins presented an overview of wireless telecommunication networks with a focus on understanding small cell deployments being increasingly requested by wireless carriers. The presentation is attached to this report. Mr. Hopkins reviewed industry trends, noting the shift from the installation of macro sites (cell towers) to deployments of small cells (metro cells). Mr. Hopkins stated that increase in installation of small cells is in response to an influx of data traffic. He noted that the demand for data has increased, particularly where there is greater population density. Examples of higher traffic areas include colleges, stadiums or hospitals. In these locations particularly, there are concerns that capacity limitations may limit the ability to contact emergency services. Small cells located throughout the City help to transmit data faster, without requiring bringing the signal to the macro cell and back. Mr. Hopkins stated that based on the increasing prevalence and demand for small cell technology, companies are developing more complex equipment, often with smaller footprints. He noted that the types of products are increasing, including more attractive and decorative options as well as concealed. Mr. Hopkins noted that many times, antennae are not readily identifiable or visible. Mr. Hopkins stated that because permitting and zoning processes are highly variable in different municipalities, carriers have varied methods of site selection. Another option for carriers is to rent available space on poles, light posts or rooftops owned by the City or private entities to locate small cell equipment. Mr. Hopkins explained that the utilization of small cell technology is due to several factors; ability to use more frequencies, ability to be concealed and lower cost. While macro cells can cover a much larger footprint, they can be very expensive and difficult to locate. It was noted that macro cells/towers are approximately 3.5' wide and 80' tall. Mr. Hopkins reviewed telecommunication language and demonstrated samples of new ways to conceal equipment (i.e. in the base of a lamp post). He noted that disguising telecommunication equipment has become very prevalent. The Chair explained that the Engineering Department does not believe that the City's 50 year old concrete light poles can carry additional equipment. If a carrier desires a specific light pole location, the City may require them to purchase a replacement pole. A Committee member asked that Mr. Hopkins provide product information to City department staff to consider. Committee members agreed that selection of equipment should be at the discretion of the Planning and Engineering Departments.

Mr. Hopkins reviewed site selection. He stated that carriers' engineers review the proposed location, ease of construction, construction costs. The Committee requested that Mr. Hopkins provide site selection requirements for both macro sites and small cells. The Chair noted that there are some locations in the City that the City may want to consider as macro sites to offset the number of small cells.

The Wireless Subcommittee is evaluating how to incorporate design details for macro sites in the Design guidelines.

Committee members questioned whether the state has developed standards for wireless telecommunication equipment. Associate City Solicitor Alan Mandl explained that municipalities are so far working on developing standards individually. He stated that there are attempts by the wireless industry to reduce the amount of control that municipalities have. He noted that there are a few municipalities that have crafted guidelines and increased fees to limit the location of equipment. Atty. Mandl explained that while the Subcommittee has reviewed the work of different communities (Evergreen Park, Illinois; San Francisco, California; Salem, Massachusetts), municipalities have limited authority over grants of location, which are governed by state statute (Chapter 166) and the FCC (Federal Communications Commission). He noted that the federal government has legal standards that prohibit unreasonable discrimination and the prohibition of wireless service. The wireless telecommunication grant of location process must be objective, which is why development of clear policies and standards is essential. He noted that the subcommittee is drafting design standards with input from the Planning Department.

#41-18 **Review of City code governing petitions for wireless communications**
COUNCILORS CROSSLEY, ALBRIGHT AND LAPPIN requesting a review of proposed City Code Sec. 23-20, authorizing the adoption of City Council regulations governing petitions for permission to install wireless communications facilities and new poles proposed for wireless communications use in the pubic ways of the City. Such rules would cover petitions that are subject to review under G.L. c. 166, §22 and 47 U.S.C. §332(c) (7) and petitions that are subject to limited review under 47 U.S.C. §1455 ("Eligible Facilities Requests").

Action: **Public Facilities Approved 6-0**

#42-18 **Review of City Council regulations governing petitions for wireless communications**
COUNCILORS CROSSLEY, ALBRIGHT AND LAPPIN requesting a review of proposed City Council regulations pursuant to City Code Sec. 23-20, governing petitions for permission to install wireless communications facilities and new poles proposed for wireless communications use in the pubic ways of the City. Such rules would cover petitions that are subject to review under G.L. c. 166, §22 and 47 U.S.C. §332(c) (7) and petitions that are subject to review under 47 U.S.C. §1455 ("Eligible Facilities Requests").

Action: **Public Facilities Held 6-0**

Note: The Committee discussed items #41-18 to allow the City to promulgate and amend design guidelines as necessary and #42-18 to adopt design guidelines simultaneously. Atty. Mandl reviewed the attached outline of proposed regulations. He stated that Planning and Engineering are reviewing the draft documents. Once the content is fully coordinated, the Committee will implement the design guidelines. It was noted that the Historic Commission is working with Planning Department staff to review the proposed Ordinances in detail. The proposed Ordinance amendment will allow the Council to adopt procedures and standards. Atty. Mandl confirmed that the draft ordinance does not include the

proposed standards and procedures because as federal and state law changes, the changes will be more easily incorporated into a separate document.

Atty. Mandl noted that the proposed standards can provide guides to carriers, noting that there are locations less preferred than others. The clear guidelines will allow carriers to evaluate site options while being aware of the City's preferences. It was explained that while the FCC limits the size of the equipment, their standards do not ensure that the equipment will be unnoticeable or aesthetically pleasing. During review of the 2017 wireless grants of location, Committee members expressed concerns that approval of a location would create a "base station" allowing subsequent carriers to co-locate without approval. Fire Department Director of Technical Services Alex Chadis explained that while granting a location may create a "base station", carriers are highly unlikely to co-locate on a pole because of physical limitations and frequency interference. Mr. Chadis noted that while a neutral host may request to locate on a pole and rent to multiple carriers, it is not likely that separate carriers will locate on one pole.

Atty. Mandl noted that to attach equipment to a City owned pole, a licensing agreement is required. A draft has been circulated to some carriers. If there is an approved design for a specific pole in a village center, the City can obtain estimates for the cost of replacing the pole. Mr. Chadis explained that because of the limited footprint of the small cell frequencies, a carrier may need to locate within a specific area to address signal deficiencies within a certain radius. He noted that a distance variation of 50'-100' away may significantly impact the functionality of the proposed small cell, in which case the carrier may wish to move or replace an existing pole. Mr. Chadis noted that the carriers are supplying schematics of proposed equipment. While the City may not want to require the carriers to develop a specific aesthetic, it can limit some aspects of the equipment (noise, general size, etc). It was confirmed that the equipment typically does not make any noise, however the question should be posed on the application. Atty. Mandl confirmed that the equipment must comply with FCC regulations with regard to acceptable radio frequency emissions. The municipality can require the carrier to show that they are in compliance with the FCC regulations, but may not unreasonably discriminate. Atty. Mandl noted that the FCC has had pending legislation relative to changing the standard for radio frequency emissions for several years.

Mr. Chadis confirmed that the City's Emergency Operations can use light poles designed to conceal for their system equipment. He noted that it may be more challenging for carriers to locate on light poles however, because of the lack of availability of other facilities (Fios). Using light poles may create other challenges for the carriers. Committee members questioned whether wireless equipment can be undergrounded in village centers. Mr. Hopkins noted that the expense of undergrounding equipment is significantly less when construction is underway and that couldn't be used for multiple carriers. Committee member discussed the cost of undergrounding equipment. Associate City Engineer John Daghlian noted that the expense of undergrounding is passed onto ratepayers. Committee members were in agreement that the City should be considering underground all conduit, wherever possible and it was recommended to coordinate potential wireless locations with carriers in advance of major projects, such as West Newton Square.

The Chair explained that the subcommittee will continue to develop design guidelines. Councilor Leary motioned to hold the design guidelines (#42-18) which carried unanimously. Councilor Danberg motioned to approve the proposed Ordinance amendment (#41-18) to allow the City to promulgate and amend design guidelines as necessary. Her motion carried unanimously.

Referred to Public Facilities and Finance Committees

#60-18 **Review of filing fee for grant of location petitions**
COUNCILORS CROSSLEY, ALBRIGHT AND LAPPIN requesting a review of proposed amendment to City Code Sec. 17-3(19), governing filing fee(s) for grant of location petitions for placement of wireless communications facilities and poles constructed primarily for wireless communications purposes

Action: **Public Facilities**

Note: Atty. Mandl presented the proposed Ordinance Amendment to increase the filing fee for Wireless Telecommunication grants of location from $35 to $500. The Chair explained that the City may not charge more than is spent on reviewing petitions. Atty. Mandl provided the attached memo, justifying and explaining the increased fee. He stated that when evaluating the fee for wireless telecommunication equipment, he compared other municipalities' fees as well as a non-invasive Mass DOT highway access permit. He noted that in other municipalities, fees for comparable permits range from $300 to $1000. Atty. Mandl noted that time and cost estimates were obtained from each department to calculate the cost of each review to the City. He estimates that the City will spend approximately $655 collectively to review and inspect each wireless grant of location petition. He stated that each site must be reviewed independently and it is the Law Department's recommendation that the fee of $500, is per location. Atty. Mandl stated that the estimates for staff time are conservative. It was noted that the fee for grants of location for other utility companies has not been evaluated. Committee members asked that the fees for non-wireless utility grants of location be reviewed and updated as appropriate. Councilor Danberg motioned to approve the item which carried unanimously.

#50-18 **5-58 for the Crescent Street Housing and Ford Playground Redevelopment Project**
COUNCILOR GENTILE on behalf of the CRESCENT STREET WORKING GROUP redocketing the DESIGN REVIEW COMMMITTEE petition, pursuant to 5-58, for schematic design and site plan approval at 70 Crescent Street for the creation of mixed-use housing, redevelopment of the Reverend Ford Playground and expand open space by at least 20,000 square feet in accordance with Board Order #384-11(4) dated November 16, 2015.
Public Hearing Closed 02/07/2018

Action: **Public Facilities Held 6-0**

Note: Due to recent action by the Community Preservation Committee, and subsequent discussions within the administration, the Mayor requested this item be held in Committee pending revised housing and/or funding plans. Therefore the Chair provided an update for the committee, and a brief discussion of process looking ahead was discussed, before holding the item.

At the public hearing on February 7, 2018, many Councilors raised concerns relative to the funding plan for the Crescent Street project. Committee members and members of the public called for an independent review of the Crescent Street project pro forma and budget. At the Community Preservation Committee meeting on February 13, 2018, CPC Committee members voted to hold the item, as well as engage an independent third-party professional to review the development and operating budgets for the Crescent Street housing proposal. At the CPC meeting there were several cautions raised about the development budget and pro forma. At that point, alternative funding plans and housing plans (affordable housing mix) were proposed. The Mayor requested that the Public Facilities Committee hold the site plan and schematic design approval pending their deciding how to move forward.

The Chair explained that when the 5-58 process requires Council approval of both the site plan and schematic design of the building, including building floor plans and elevations. Floor plans are determined by the building program (in this case unit mix) which is now uncertain. The Committee may negotiate changes and/or affix conditions to their approval, as long as these are consistent with the Board Order. Based on the potential for a revised funding proposal, the proposed plan may be subject to change. In addition, details on how the Newton Community Development Association (NCDA) would oversee a property management company after the property is turned over are unclear. The Chair asked City Solicitor Ouida Young to evaluate concerns raised by Committee members relative to the 5-58 process, who had begun to draft a memo relative to the 5-58 process. In addition, the Chair noted that NCDA (Newton Community Development Authority) is a legal entity that resides within the Planning Department, with the Planning Department Director being the only official member, by title. Ms. Young has also begun a draft to explain why this entity was formed, the purposes it has served, and how it might work to oversee City housing. These materials will be completed in time for the project to come back before the Committee.

Committee members agreed that it is not appropriate to vote on the 5-58 “Site Plan Approval” prior to approval by the CPC, as there are several options (funding, programming) that can impact the plan. A Committee member asked whether the CPC is considering approval of the park portion of the project prior to approval of the entire site. It was confirmed that the CPC is no longer considering separating components of the project. One Councilor asked whether a property management firm has been hired. Chief Operating Officer Jonathan Yeo noted that the City is still in discussions with property management firms. He confirmed that the CPC has been working on a list of third-party reviewers. He noted that the timing of the review will be impacted by the administration’s final proposed pro forma and construction costs, which are still being developed. With a motion from Councilor Leary to hold the item, Committee members voted unanimously in favor.

The Committee adjourned at 9:00 pm.

Respectfully Submitted,

Deborah Crossley

Comm-Tract
Voice/Data/Video Networks

Comm-Tract Corp

City of Newton
"Cell Sites 101"

Informational Working Session

2-21-18

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Agenda

- Introductions
- Review of Newton Commission Expectations
- Review of "Cell Sites 101" Informational Session Topics
- Overview of Presentation:
  - Industry Trends impacting Deployment of Cell Sites
  - Types of Cell Sites
  - Cellular Networks – Architectures
  - Types of Cell Sites of Concern to Newton
  - Carrier requirements for Cell Sites
  - Newton GOL Process
- Definitions:
  - Acronyms
- General Discussion – Q+A
- Next Steps/Action Items

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Wireless Industry Trends

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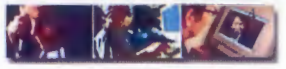
Wireless Industry Trends
Antennas and Towers

Three major network shifts are occurring:

- From Voice to Data
- From Outdoors to Indoors
- From Macro to Metro/Micro

Implications for Carrier Networks:

- Site Configuration Trends
- Densification
- Concealment and tower safety issues
- More fiber at the tower sites
- Multi-band, multi-technology networks
- Overloading towers and mounts
- Indoor installations (DAS, Small Cells)
- Backhaul and power issues for urban densification
- Fitting more complex network equipment into a smaller footprint
- Components supporting better heat management and efficiency



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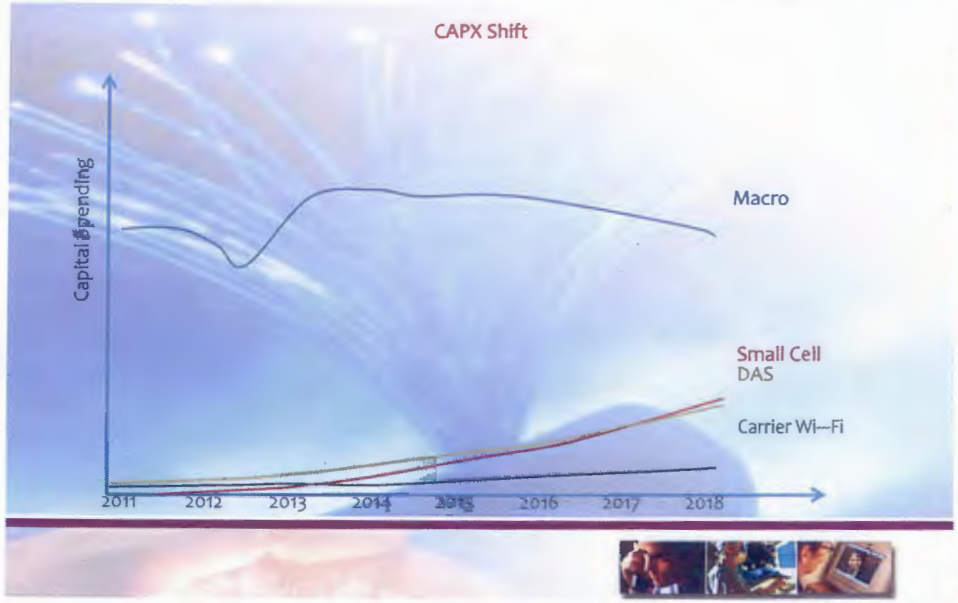
Wireless Industry Trends
Capital Spending Shift



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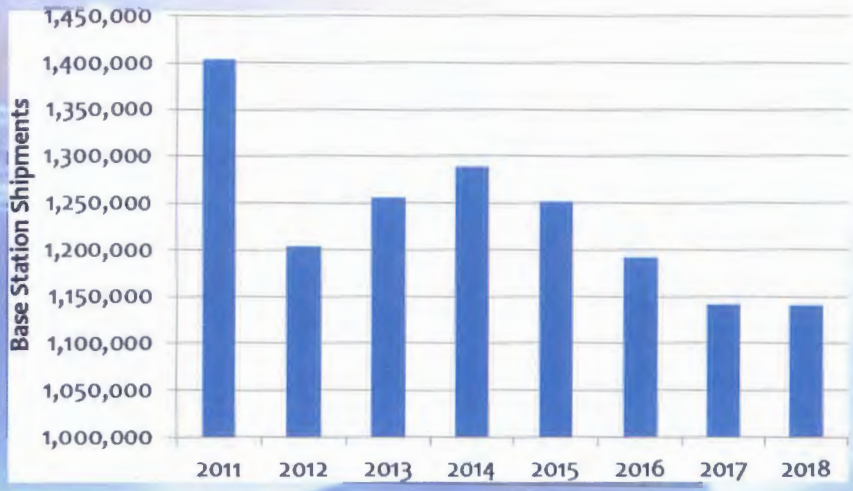
Wireless Industry Trends
Uneven Macro Deployments



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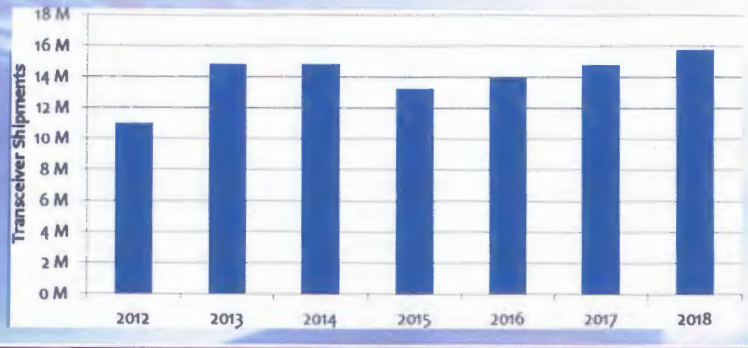
Wireless Industry Trends
Macro Receivers Up

Macro base station spending is down, however the number of transceivers is increasing

- More mobile data
- New frequency bands
- MIMO and AAS drive more transceivers at lower power



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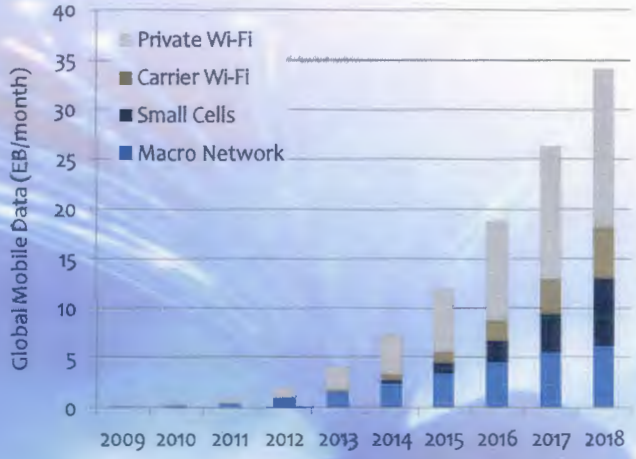
Wireless Industry Trends
How Traffic Moves Now



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Wireless Industry Trends
Increasing # of Devices

Pushing the the need for more speed and capacity across wireless networks

- Additional broadcast locations required; and closer to the handset
- Ongoing growth in tower and traditional macro sites
- Robust DAS networks at high capacity venues
- Small cells to improve coverage, quality and capacity
- Wi-Fi offload

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Wireless Industry Trends
Tower and Macro Infrastructure

- Ongoing growth in required broadcast locations
- More complex and sensitive RF requirements
- Increased usage of Remote Radio Heads located closer to the antennas
- Cost effective backhaul solutions
- Permitting and zoning processes continue to be a challenge, particularly in certain markets leading to increasing concealment and stealthing requirements

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Wireless Industry Trends
DAS (Distributed Antenna System)

- Neutral host model
- Technology continuing to evolve, including FTTA
- Robust design standards
- Cost effectiveness
- Venue requirements
- Concealment of antennas

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Wireless Industry Trends
Small Cell and Wi-Fi

Small Cell Trends:

- Hardware development still in early stages
- Narrowband to broadband
- Deployment challenges to be addressed
- Unit cost
- Lease rights
- Power
- Backhaul

- **Wi-Fi Trends:**
- Not all networks created equal
- Higher density designs
- Integration with venue CRM
- Carrier offload and auto-authentication not prevalent yet

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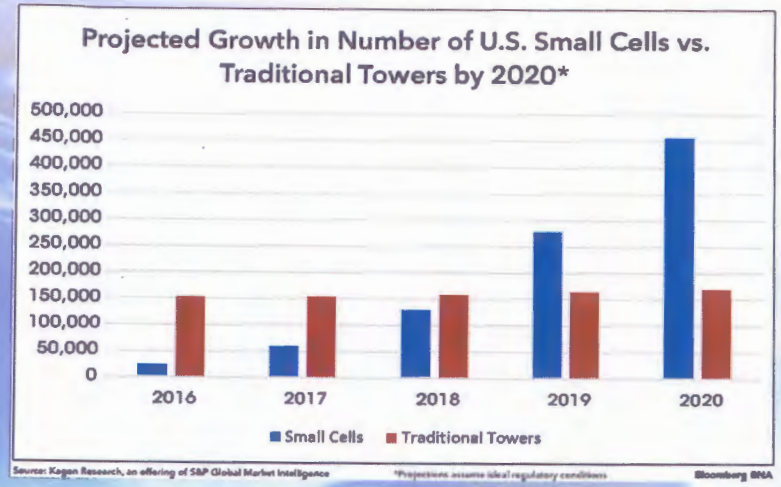
Wireless Industry Trends
Small Cells



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Types of Cellular Sites

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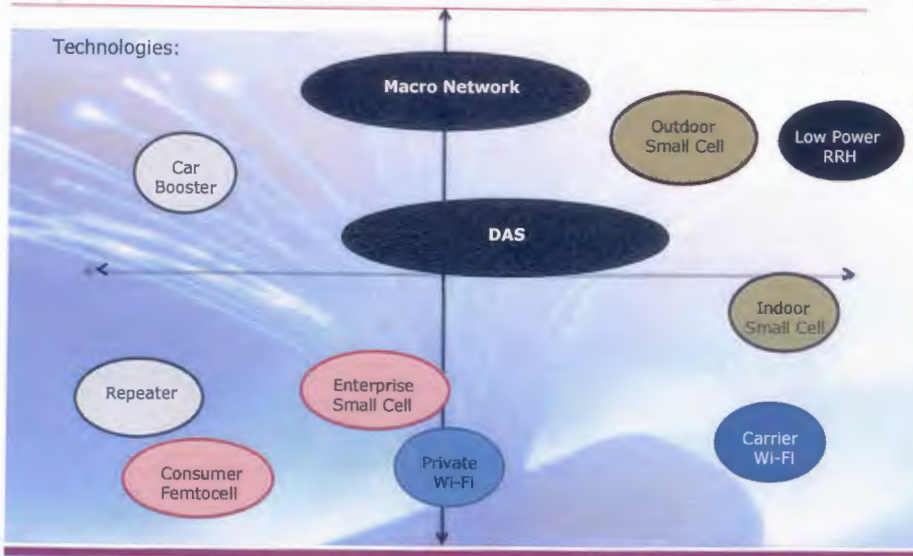
Types of cell Sites
Each Technology has a Role



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Small Cells

- Today - Typically single band and MIMO capable.
- Next-generation - multimode, multiband, higher order modulation MIMO-capable, smaller, lighter, and will consume less power.
- Designed to be part of the heterogeneous network that combines many diverse wireless data technologies operating over a wide range of licensed and unlicensed spectrum.

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Small Cells

Small Cell Categories:

- **Metro cell**
  - Power – 5W
  - Coverage Radius – Up to 1000'
  - Capacity – Up to 200 Users
  - Primary Use – Outdoors
- **Picocell**
  - Power – 1W
  - Coverage Radius – Up to 750'
  - Capacity – Up to 64 Users
  - Primary Use - Indoors
- **Femtocell**
  - Power – .1W
  - Coverage Radius – Up to 60'
  - Capacity – Up to 6 Users
  - Primary Use - Indoors

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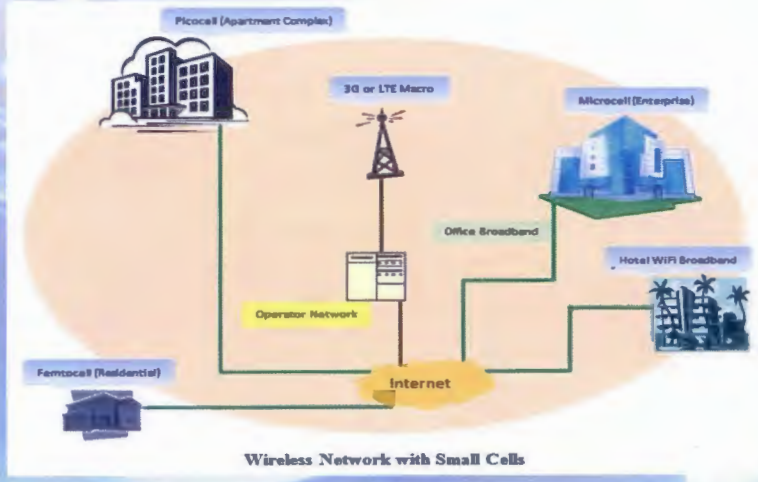
Small Cells



Wireless Network with Small Cells

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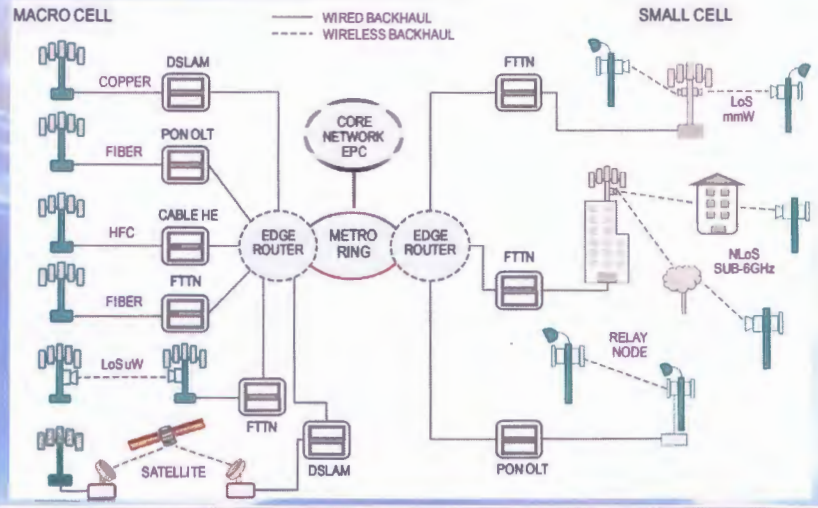
Small Cells
Integration into Macro Cell Network



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Macro Cells

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Macro Cells

- A **Macro Cell** is a cell in a mobile phone network that provides radio coverage served by a high power cell site (tower, antenna or mast).
- Generally, Macro Cells provide coverage larger than Micro Cell.
- **Macro Cell** base stations have power outputs of typically tens of watts.

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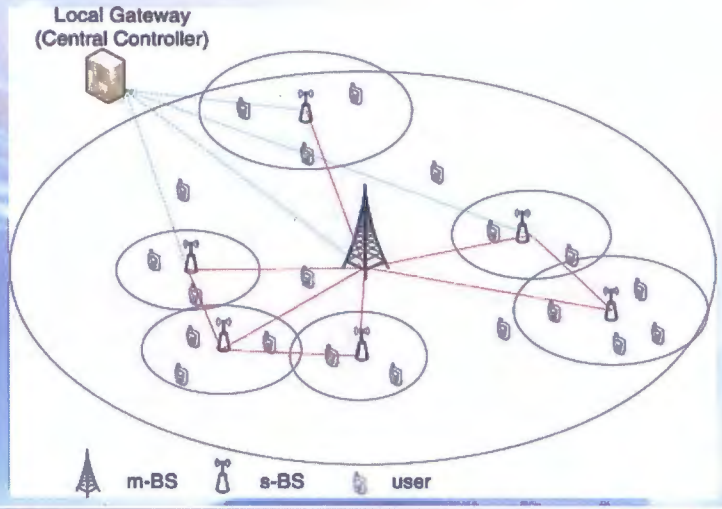
Macro Cell



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Cellular Network Architecture

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Cellular Network Architecture

- The high-level network architecture of **LTE** is comprised of following three main components: The User Equipment (UE). The Evolved UMTS Terrestrial Radio Access Network (E-UTRAN). The Evolved Packet Core (EPC).
- A **cellular network** or **mobile network** is a communication network where the last link is wireless. The network is distributed over land areas called cells, each served by at least one fixed-location transceiver, known as a **cell** site or base station
- **Base Transceiver Station (BTS)** – It is actually the antenna that you see installed on top of the tower. The BTS is the Mobile Phone's access point to the network. It is responsible for carrying out radio communications between the network and the Mobile Phone. ... A BTS is assigned a Cell Identity
- **Mobile Equipment (ME)** – This refers to the physical phone itself
- **What is a Cell?** – A base station (transmitter) having a number of RF channels is called a cell. Each cell covers a limited number of mobile subscribers within the cell boundaries (Coverage area). Approximately a Cell Radius is 1 Km to 30

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Cellular Network Architecture

- **Base Station Controller (BSC)** – The BSC controls multiple BTS's. It handles allocation of radio channels, frequency administration, power and signal measurements from the MS, and handovers from one BTS to another. A BSC also functions as a "funneler". It reduces the number of connections to the Mobile Switching Center (MSC) and allows for higher capacity connections to the MSC. A BSC may be collocated with a BTS or it may be geographically separate. It may even be collocated with the Mobile Switching Center (MSC)

- **Mobile Switching Center (MSC)** – The MSC is the heart of the GSM network. It handles call routing, call setup, and basic switching functions. An MSC handles multiple BSCs and also interfaces with other MSC's and registers. It also handles inter-BSC handoffs as well as coordinates with other MSC's for inter-MSC handoffs.

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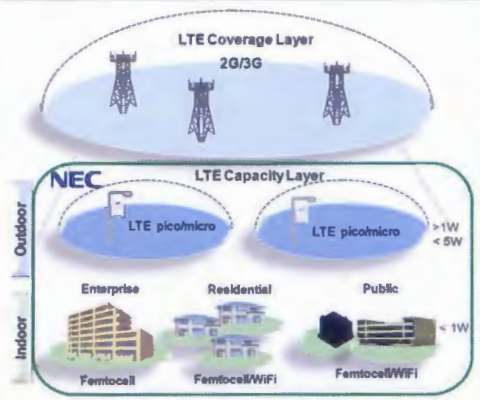
Heterogeneous Architecture

LTE Small Cell & Het-Net



Heterogeneous network

Coverage Layer (lower frequency) + Capacity Layer (higher frequency and small cells)

Small Cell benefits include:
- ✓ Big capacity
- ✓ High performance
- ✓ Easier operation
- ✓ Faster deployment
- ✓ Low TCO
- ✓ New services
- ✓ Additional revenue

Challenges include:
- ✓ Interference
- ✓ Resource management
- ✓ Multi vendor SON & management
- ✓ Backhaul

- ✓ **Mind Set Change!**

The small cell solutions will be key element of a sustainable mobile broadband business

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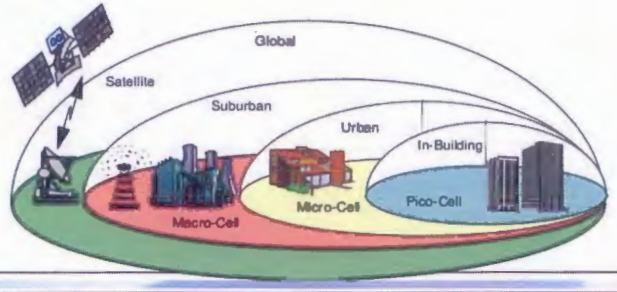
Heterogeneous Architecture

3G UMTS

- Types of Cells and Base station to use them
  - Cells will operate in a hierarchy overlaying each other



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Cell Sites of Concern to Newton

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Cell Sites of Concern to Newton
Metro Cell

- **Metro Cell**
  - Miniature version of the traditional Macro Cell.
  - Compresses the attributes of a cell tower like radios and antennas into a low power, portable and easy to deploy radio device.
  - Metro Cells typically have a range varying from 10 meters to a few hundred meters
  - Offload traffic from the macro network in a high density short range environment or to strengthen the range and efficiency of a mobile network.
  - The terms Small Cell, Micro Cell and Metro Cell are commonly used interchangebly.

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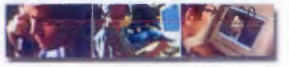
Cell Sites of Concern to Newton
Why Small Cells for Newton?

- **Augmented coverage and capacity.** Superior in-building and cell edge performance – Contemporary wireless networks regularly face issues of poor coverage inside buildings and in areas far away from the cell tower. Small cells significantly improve the overall experience in such circumstances.
- **Easier technology integration** – Small cells can be integrated with all flavors of 3G, LTE, LTE-Advanced and Wi-Fi technologies.
- **Long term solution for the operator** – Even though more base stations and state-of-the-art technologies can be deployed to temporarily resolve network congestion issues, the demand will generally exceed the supply. However, small cells are designed to offer adequate network resources to handle growing data demand for a few years within a specific environment.



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Cell Sites of Concern to Newton
Why Small Cells for Newton?

- **Higher spectrum bands are welcome** – Recently, the mobile network providers have been fighting a battle for the lower band spectrum below 1 GHz. But since limited propagation characteristics are not an issue for these miniscule networks, and more bits/Hz are required, spectrum over 2 GHz is considered good. The FCC in US has been pushing for 3.5 GHz spectrum for small cell networks. Some stakeholders have asked for unlicensed spectrum for such networks.
- **Attractive business case** – The reduced capital and operational expenditure (CAPEX/OPEX) involved in the small cell ecosystem has made them a tempting business proposition for the mobile service provider. Studies have shown that the cost of radio equipment for small cells could be just one-tenth of the corresponding costs for a Macro Cell. The ease, flexibility and swiftness of deployment make such networks even more appealing.

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Cell Sites of Concern to Newton
Metro Cell

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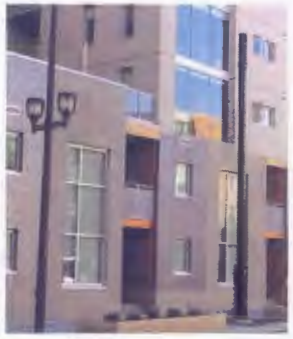
Cell Sites of Concern to Newton
Metro Cell



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Cell Sites of Concern to Newton
Metro Cell

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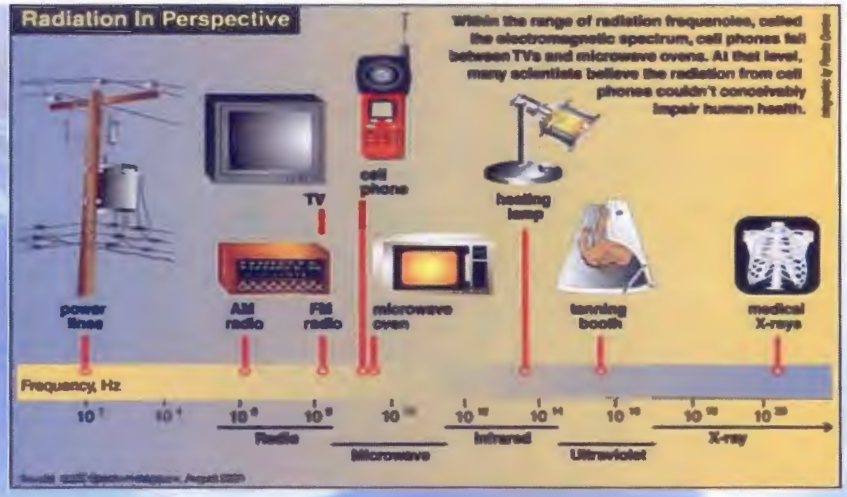
Cell Sites of Concern to Newton
Radiation



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Cellular Site Requirements

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Cell Site Requirements
Overall Carrier Priorities

- **Available Azimuths**
- **Equipment Area**
- **Ease of Construction**
- **Construction Cost**
- **Structural Capacity**
- **Ease of Leasing**
- - Prefer small property owners, faster and simpler lease process
- **Cost of Leasing**
- **Ease of Access**
- **Preferred RAD Center**
  - Center of Radiation at desired height of Antenna
- **Cost of Expansion/Modification**
- **Proximity to Residential Areas**
- - Residential more valuable due to demand and zoning restrictions

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Cell Site Requirements
Verizon Priorities

- **Land for Tower Sites**
  - Leased Area 100' by 100'
  - 100' to 500' from Major Road
  - Zoning Classification that allows for communications structures
  - Power and Backhaul facilities
  - Access to facility 24 by 7 by 365
- **Building or Rooftop Sites**
  - Minimum 3 to 4 stories tall
  - Zoning Classification that allows for communications structures
  - Power and Backhaul Facilities
  - Flat Roof, capable of handling 150lbs per SQ FT
  - 20' by 30' area on roof, or ground immediately next to the building
  - Access to facility 24 by 7 by 365

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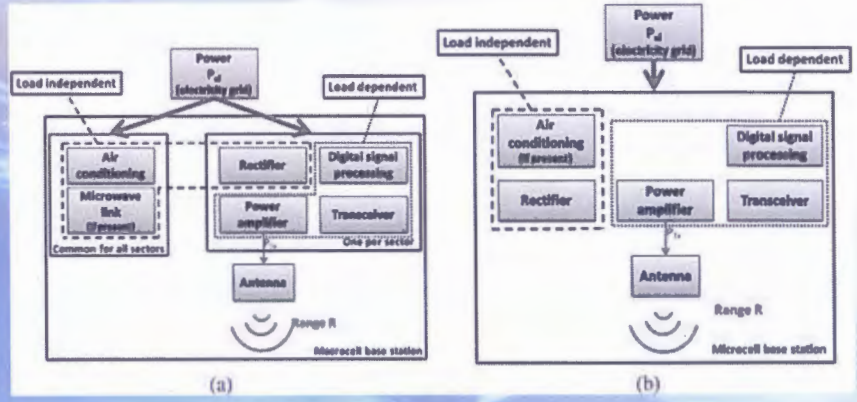
Cell Site Requirements



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Acknowledgements

- RCR Wireless
- Mobilitie
- T Mobile
- Verizon
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- Technopedia
- Rohde and Schwarz
- Harris Consulting

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To: Public Facilities Committee
From: Alan Mandl
Date: February 16, 2018
Re: **Grant of Location Procedures and Standards for Wireless Communications Facilities Located in the Public Ways**

City departments (Law, Planning and Development, DPW, IT and Fire) are in the process of preparing draft grant of location procedures and standards for wireless communications facilities located in the public ways. These procedures and standards are needed in light of changes in federal law and the increased deployment of wireless communications facilities in the public ways across the country. Because there have been and are expected to be changes in federal law regarding grants of location, the Law Department has recommended that these detailed procedures and standards be adopted by the City Council rather than embedded in the City Code.

A detailed draft of the recommended Procedures and Standards is being finalized. Final design standards are being prepared and we will be receiving additional technical input. The Historic Commission may provide input. As soon as it is ready, a recommended draft will be provided to the Committee and will be made available for comments from interested parties, including wireless stakeholders.

Below is an outline of the main components of the Procedures and Standards. They fall in the middle of the complexity spectrum-more detailed than some ordinances and bylaws and less detailed than others. The goals are to protect the interests of the City and its residents and businesses, enable the responsible deployment of wireless communications facilities to meet the needs of the City, afford easy to understand and apply ground rules, and assure that wireless applicants are provided objective set of procedures and standards which are not unreasonably discriminatory and which do not prohibit or have the effect of prohibiting wireless services.

Outline of Grant of Location Procedures and Standards

I. Introduction

II. Scope of Regulations

III. Grant of Location Application Procedures

A. Will track state and federal law
B. Application process; pre-application meeting encouraged
C. Tolling agreements
D. Incompleteness of applications
E. Application requirements
F. Application form(s)

IV. Substantive Standards

A. Definitions

B. Standards Related to Location of Wireless Communications Facilities

1. determination of sites
2. preferred locations and locations not preferred

C. Standards Related to Poles

1. Limitation on attachments
2. Replacement Poles
3. New Poles; Exceptions
4. City-Owned Infrastructure; concrete pole locations involve pole replacement at applicant's expense per terms of license agreement
5. Cooperation regarding removal of double poles

D. Standards Related to Attachments

1. ADA requirements compliance
2. RF Emissions compliance (federal standards)
3. Surface Area of Antenna
4. Size of above ground equipment
5. Lowest point above grade
6. Maximum height
7. Color; paint

8. Shielding of wiring
9. Antenna placement
10. Mounting
11. Antenna panel covering
12. Equipment enclosure, placement and orientation
13. Signage, logos, decals
14. Grounding
15. Electric meters (owned by Eversource; goal of avoiding the need for electric meters)
16. Cabling
17. Guy wires
18. Wind loads
19. Obstructions
20. Traffic safety
21. Lighting
22. Noise; cooling fans
23. Vibration
24. Non-interference with other users of pole
25. Avoid drip line of tree in public way
26. Intent to include photos and diagrams of acceptable attachments

E. General Conditions

1. Compliance with codes
2. Expiration of permit for non-use
3. Abandonment and removal
4. Non-emergency repairs
5. Removal of utility pole
6. Other permits
7. Performance bond
8. Insurance
9. As built drawings
10. Contact and site information
11. Indemnification

F. Exceptions to a Standard

Applicant may seek an exception on ground which include any support for a finding that the Standard has the effect of prohibiting wireless service or is otherwise contrary to federal law

G. Other

Applicants have been and will continue to be asked to accept a condition that they not treat the pole location as a “base station” as defined under federal law. To

date, this condition has been accepted.

V. Amendments

Process for amending the Procedures and Standards

Other

Separate Procedures and Standards and forms are being developed to cover “Eligible Facilities Requests” and will be provided to the Committee as soon as they are ready for review.

Recommended policies and procedures regarding access to City-owned poles for wireless attachments are being developed by DPW and other departments. Under current law, such access will require a separate agreement with the City approved by the Mayor or her designee.

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To: Public Facilities Committee
From: Alan Mandl
Date: February 14, 2018
Re: Proposed Application Fee for Wireless Grants of Location

This proposed amendment to City Code Section 17-3 (19) adopts an application fee of $500 for grant of location petitions for (1) wireless communications facilities to be attached to utility or City-owned poles located in the public ways and (2) new poles constructed primarily for wireless communications purposes.

Proposed Amendment

Section 17-3(19) is amended by striking out existing Section 17-3(19) and inserting in place thereof a new Section 17-3(19) as follows:

(19) Public Utility Petitions

a) Grant of location petitions for facilities other than wireless communications facilities	$35.00 per location
b) Grant of location petitions for wireless communications facilities attached to utility or City-owned poles or for new poles constructed primarily for wireless communications purposes	$500 per location

Basis for the Proposed Application Fee

The City Council is authorized to review grant of location applications under State law,

G.L.c.166, §22. The wireless industry has begun to seek multiple locations for small cell technology in the public ways, primarily by attaching to utility and municipally-owned poles (including streetlights). It is necessary for the City Council to incorporate into its grant of location process substantive standards and review procedures in accordance with state and federal law. The additional work efforts associated with the review of wireless grant of location applications justifies a reexamination of the current $35 application fee. The Law Department prepared this analysis with the assistance of other departments involved in the grant of location process.

Comparative Analysis and Cost Analysis

The general approach involved a review of the following:

MA DOT- requires a $500.00 application fee for a permit to access a state highway. The Access Permit Application Form and Access Permit Submittal Checklist are less complex than wireless grant of location applications.

Comparable Municipal Fees- based upon a small sample, recently enacted application fees range between $300-$1000: Dartmouth ($300); Salem ($500); Dallas Staff Recommendation ($750); and Evergreen Park IL ($1000) are examples. Many communities have not updated their application fees and are not useful comparisons.

Work Tasks: Time and Cost – Newton's $35 fee is out of step from a cost basis standpoint. There are numerous tasks to be performed by several departments. Examples with time estimates include:

City Clerk	Log in of application; issue notice of incompleteness (0.50)
DPW and Planning	Review of application for completeness; Review of supplement to application for completeness (2.00)
DPW and Planning	Review of substance of application based upon City Standards (3.00); site visits as needed (2.00)
DPW and Planning	Preparation of memos to the Public Facilities Committee and any recommendations regarding the need for peer review (2.00)
DPW and Planning	Fact-finding regarding the availability of alternative sites (2.00)
Fire and IT	Input as needed (1.00); GIS functions (1.00)
Law	Review qualification of applicant under G.L.c.166, §21; preparation of tolling agreements as needed; review of memos to the Public Facilities Committee and the Public Facilities Committee Written Report (2.00)

These and other tasks were reviewed and discussed with the departments involved. As in other cases, the municipal fee is derived by determining hourly labor rates and their costs. This methodology is supported by State guidance for cost-based setting fees. Hourly labor rates are assumed to be the hourly rates for the lowest cost employees capable of

performing the work tasks. We examined labor rates on an unloaded basis. Several work tasks are specific to wireless communications facilities-related applications. About 15.5 hours of time is estimated.

Estimated Cost

Planning and Development $30/hour x 5.5=$165.00 (labor rate from Planning and Development)

City Clerk $30/hour x .50=$15.00 (uses same hourly rate as Planning and Development)

DPW $53/hour x 5.5= $291.50 (labor rate from DPW)

IT $48/hour x 1.0= $48.00 (assumes $90K salary/1875 hours)

FIRE $40/hour x 1.0= $40.00 (assumes $75K salary/1875 hours)

LAW $48/hour x 2.0 =$96.00 (labor rate from Law Department)

Total $655.50

Recommendation

Based on the above, a $500 application fee is recommended. This is believed to be a conservative figure. It is less than the estimated cost. It does not include labor rate loadings (e.g., fringe benefits). Estimated labor times were supported by discussions of the primary tasks to be performed by the departments. Labor times estimated do not include Staff time spent in attending pre-application meetings and public hearings, and in performing any post-construction compliance inspection. The suggested fee falls within the range of application fees examined. As more experience is gained, the City can revisit the propriety of the application fee.

Applicants will pay additional fees for other types of permits required (for example, an electrical permit).

PROPOSED CODE SECTION TO AUTHORIZE THE ADOPTION OF CITY COUNCIL GRANT OF LOCATION PROCEDURES AND STANDARDS FOR GRANTS OF LOCATION FOR WIRELESS COMMUNICATIONS FACILITIES IN THE PUBLIC WAYS

Sec. 23-19. Authorization to Adopt Procedures and Standards for Grants of Location for Wireless Communications Facilities in the Public Ways

(a) In the exercise of its authority under G.L.c.166, §22 and other applicable law, the City Council is hereby authorized to adopt Procedures and Standards governing petitions for grants of location for wireless communications facilities in the public ways of the City. Such Procedures and Standards shall take into account any applicable state and federal law.

(b) The Procedures and Standards to be adopted pursuant to (a) shall include petition instructions and application forms, petition review procedures and substantive standards governing the review of grant of location petitions. The City Council may consult with City departments in developing these Procedures and Standards.