



Street Light Pole Attachment
Guidelines and Procedures

November 30, 2009

CAPITALIZED TERMS NOT OTHERWISE DEFINED HEREIN SHALL HAVE THE MEANING PROVIDED IN THE POLE ATTACHMENT AGREEMENT TO WHICH THIS EXHIBIT A IS ATTACHED.

1.1

Attachment Review / Approval and Granting of License

The submittal of the Street Light Attachment License Request Form (*Exhibit A*) and the Street Light Attachment Removal Form (*Exhibit B*) shall be the exclusive procedure to be used by the City of Houston (City) in obtaining authorization from CenterPoint Energy Houston Electric, LLC (CenterPoint or Company) to attach or remove CenterPoint-approved Equipment used by the City to provide public safety, public service, or public access under the Agreement (Attachments) to / from CenterPoint street light standards and street lights on electric distribution poles. These forms will be used to adjust the inventory of Attachments from which attachment fee billing shall be generated. All Street Light Attachment License Request Forms and all Street Light Attachment Removal Forms must be submitted to:

dpl@centerpointenergy.com

Upon initial review and preliminary acceptance by CenterPoint of each Attachment installation request, CenterPoint will provide City with an electric service identifier (ESI ID) for each acceptable location. The City will then initiate a request for electric service through the City's chosen electric service retail provider.

The City will be responsible for securing electricity to each Attachment site and establishing an electric service account with the City's chosen electric service retail provider.

Each Attachment will require its own individual electric service identifier (ESI ID) and each Attachment will be billed to the City's chosen electric service retail provider for electric service in accordance with the then current CenterPoint approved tariff. The applicable tariff for City Wi² / Repeater installations is 6.1.1.1.2 - Secondary Service Less than or Equal to 10 KVA – Unmetered Service (*Exhibit J*).

In accordance with established Retail Market Guides and Texas Standard Electronic Transaction Guides, once the City has established its account with a retail provider and the retail provider submitted Move-In Request (MVI) has been received by CenterPoint, the Attachment will be approved, the Attachment License will be issued and the electric service billing will be initiated.

The above-described Attachment review and acceptance and approval process is outlined in *Exhibit C*.

1.2

Licensing of Attachment

Before making any Attachment to any CenterPoint Poles, City shall make application to CenterPoint for a license in the form of Exhibit A, attached hereto. City shall make no Attachment prior to receipt from CenterPoint of an approved license (*Exhibit E*). City shall ensure that each Attachment is made in

accordance with the terms of the Agreement as well as the specific provisions, if any, contained in the license. City shall install each approved Attachment within three (3) months of CenterPoint's approval.

1.3

Installation Standard

City's Attachments shall be installed and maintained in accordance with the Agreement, NESC and CenterPoint requirements (*Exhibit F*) as amended from time to time. CenterPoint has reviewed and approved for installation on CenterPoint Poles two (2) device types (BreezeMax Wi² and Itron Fixed Network 2.0 Repeater). The City's standard which shall be representative of the City's attachment to CenterPoint's Poles are shown in Exhibit G and Exhibit H. Prior to construction, CenterPoint must review and approve any changes to such device types during the term of the Agreement.

City is required to only use contractors which have been approved by CenterPoint. City contractors must meet NESC requirements for installation, maintenance and removal of City Attachments. City contractor review by CenterPoint will be conducted by CenterPoint's Safety Department.

CenterPoint shall have the right, but not the obligation, to conduct a pre-attachment field inspection and pole loading analysis of all proposed Attachment locations described in the Attachment license application. CenterPoint inspections shall not excuse City's non-compliance with this Agreement and applicable federal, state and local law.

Post-attachment inspections shall periodically be conducted by CenterPoint in accordance with the Agreement. These inspections shall not excuse City's non-compliance with NESC or Company construction standards, applicable federal, state and or local law.

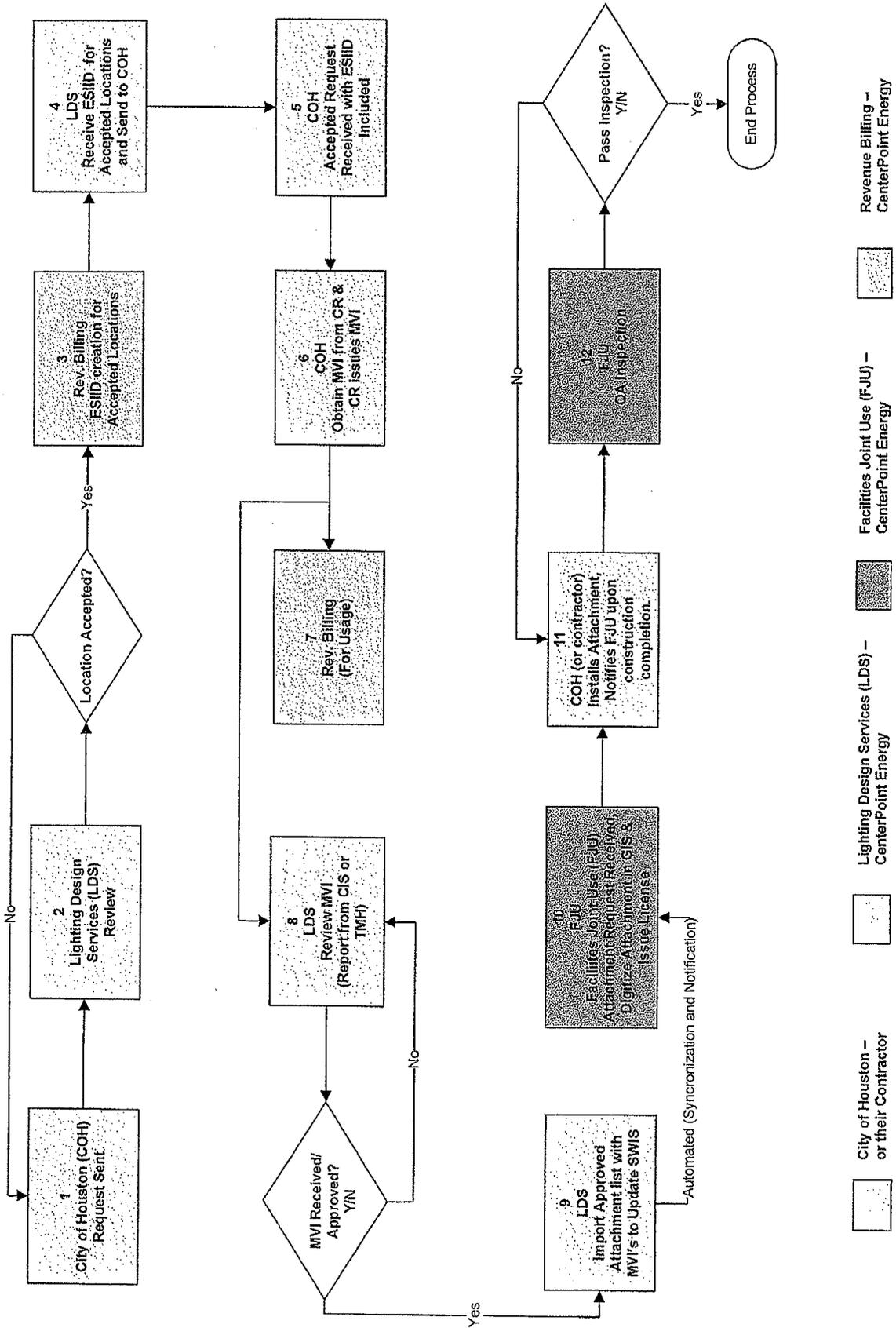
1.4

Maintenance of Attachments

City shall, at its own expense, make and maintain Attachments to CenterPoint's Poles in a safe and workmanlike manner in accordance with the Agreement, industry standards and all applicable federal, state and local codes and laws, including NESC. Violations of applicable federal, state and local codes, CenterPoint or NESC requirements, which are discovered by CenterPoint, shall within thirty (30) days or a mutually agreed upon time be corrected in accordance within the terms of the Agreement. Failure by City to maintain its Attachments or to correct any violations of applicable federal, state or local codes or laws may result in termination of the Agreement.

All Attachments will be owned, operated and maintained by City. In the event of a knockdown of a CenterPoint Pole containing City's Equipment, CenterPoint may remove or relocate City's Attachments and may store the Attachments at CenterPoint's or its contractor's facilities for a period of up to thirty (30) days.

City of Houston WiFi & AMR Attachments on CenterPoint Energy - Street Light Facilities



-  City of Houston – or their Contractor
-  Lighting Design Services (LDS) – CenterPoint Energy
-  Facilities Joint Use (FJU) – CenterPoint Energy
-  Revenue Billing – CenterPoint Energy

Criteria of Suitable Street Light Standards for Wi-Fi and Repeater Attachments

1. Installation shall be in accordance with CenterPoint-approved Attachment specification drawings.
2. Installation shall be limited to 120 / 240 volt cobra style street light standards only.
3. Street light standards with single arm attachment only.
4. Wi-Fi / Repeater devices cannot be installed on the following standards:
 - a. Standards served by overhead wiring
 - b. Standards which are "relayed"
 - c. Decorative street light standards
 - d. Standards served by 480 volt service
 - e. Standards with existing additional equipment installed
5. Wi-Fi equipment, exclusive of Repeater, shall not be installed on street light arm.
6. Wi-Fi equipment shall not be installed on street light standards with signs of questionable structural integrity. The following are indications that the standard is not suitable for additional loading:
 - a. Rust penetrating into or through the base metal, welds, base plate, anchor bolts or anchor nuts.
 - b. Dented or broken surfaces or welds indicating vehicles or other objects have impacted or damaged the standard
 - c. Leaning, bowed or bent standards
7. Only equipment and arrangements that have been reviewed and approved by CenterPoint will be allowed to be installed
8. Except as provided in the Agreement, only contractors reviewed and approved by CenterPoint will be permitted to be used for operations and maintenance of attachments.

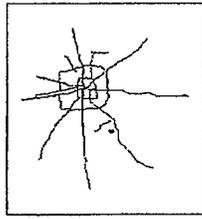
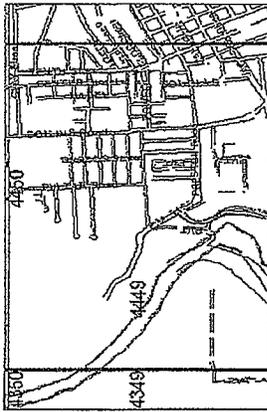
CENTERPOINT ENERGY POLE ATTACHMENT GUIDELINES AND PROCEDURES

CenterPoint Energy SITE LICENSE

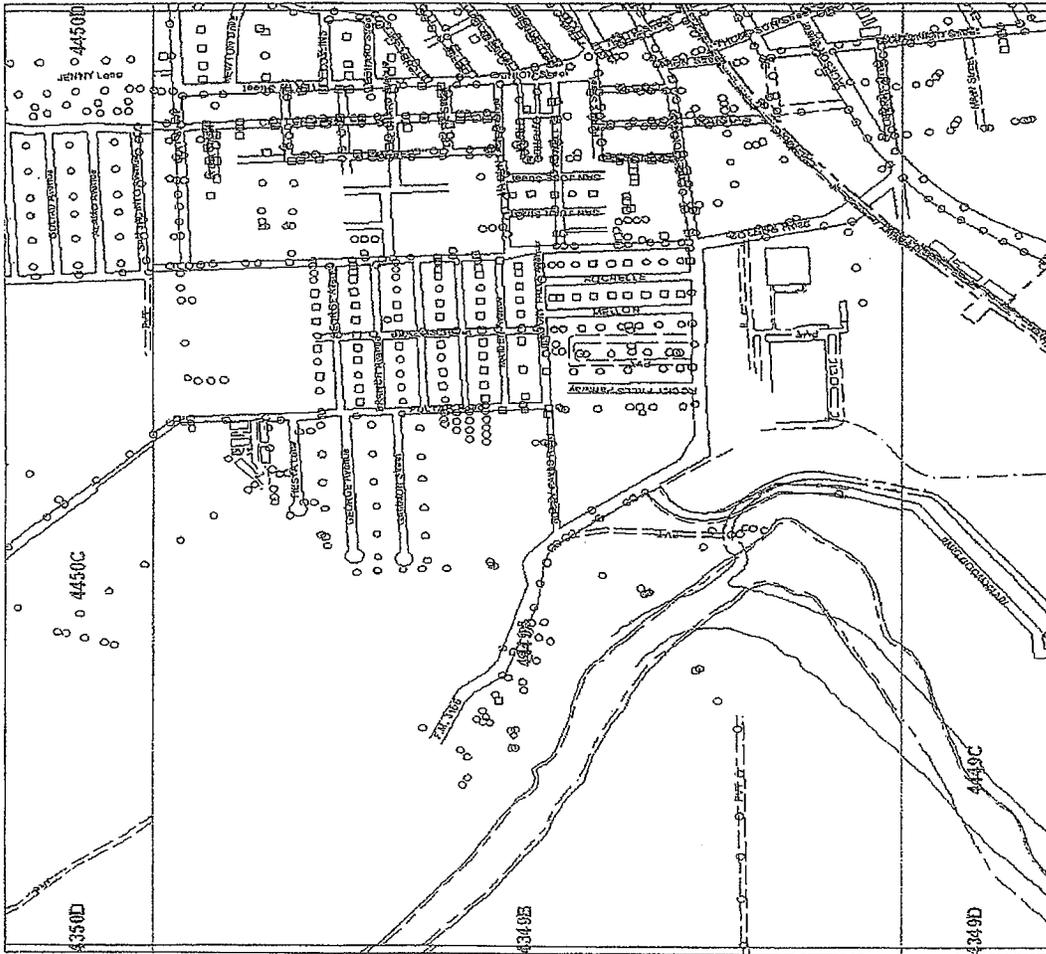
LICENSEE: 44500
 POLE ATTACHMENT AGREEMENT DATE:
 LICENSE NO.:
 EFFECTIVE DATE:
 LICENSED CONTACTS:
 DATE PLOTTED:
 REPLACES LICENSE:
 DATED:

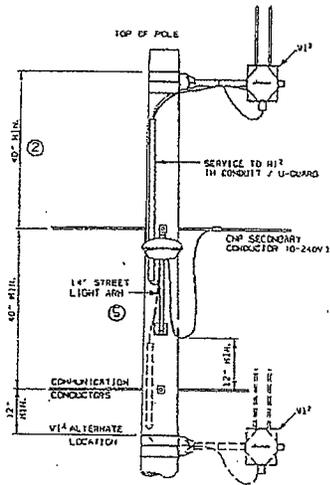
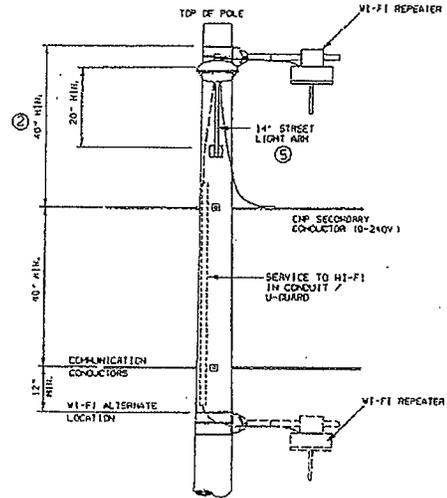
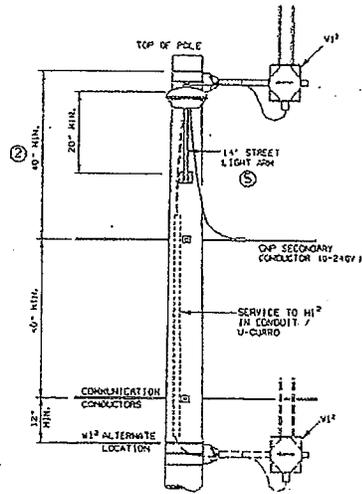
This license authorizes licensee's pole attachments on CNP's poles (shown at left and referenced above) in accordance with the above-referenced Pole Attachment Agreement, (its terms and conditions of which are incorporated by reference herein).
 Licensee agrees that its installations will comply with all requirements of the National Electrical Safety Code (NESC), CNP's Pole Attachment Guidelines and Procedures, and all other applicable standards and requirements.
 Licensee Authorization By: *[Signature]*
 Victor C. Westbrook

LEGEND:
 ○ CNP Owned Pole
 □ Foreign Owned Pole, CNP Contacting
 * CNP Poles Contacted By Licensee This License



1 inch equals 800 feet
 1 inch equals 0.11 miles





- ① REPEATER SHALL NOT BE MOUNTED ON STREET LIGHTS INSTALLED IN THE 40' MINIMUM COMMUNICATION SAFETY ZONE PER NESC 235C4 & 238E OR THE SUPPLY ZONE PER NESC 235I.
- ② IF SPACE ABOVE STREET LIGHT OR SECONDARY CONDUCTOR WILL NOT PERMIT PROPER INSTALLATION OF W12/ REPEATER EQUIPMENT AS SHOWN, INSTALL THE UNIT AT THE ALTERNATE LOCATION BELOW THE COMMUNICATION SPACE AS SHOWN.
- ③ ALL LOCATIONS MUST BE APPROVED BY CNP PRIOR TO INSTALLATION.
- ④ MAINTAIN PROPER CLEARANCE IN ACCORDANCE WITH THE NESC REQUIREMENT.
- ⑤ INSTALLATION SHALL BE LIMITED TO POLES WITH 120/240V SECONDARY. ANY POLE WITH 480V SERVICE CANNOT BE USED.
- ⑥ THE P.E.R. ON EXISTING STREET LIGHTS CAN BE USED TO POWER THE W12/ REPEATER EQUIPMENT. ALL CORDS RUNNING ALONG THE STREET LIGHT ARM SHALL BE SECURELY FASTENED USING TIE WRAPS EVERY 2 FEET.
- ⑦ ONLY ONE W12/ REPEATER INSTALLATION IS ALLOWED PER POLE.
- ⑧ THE W12/ REPEATER ANTENNA SHOULD BE INSTALLED PERPENDICULAR TO COMMUNICATION OR CNP SUPPLY CONDUCTOR.
- ⑨ ONLY QUALIFIED PERSONNEL WILL BE ALLOWED TO INSTALL THE CONDUCTOR THRU THE COMMUNICATION SAFETY ZONE AND MAKE FINAL CONNECTION TO THE STREET LIGHT HEAD.
- ⑩ THE ANTENNA SHALL NOT BE MOUNTED ON THE SAME FACE OF THE POLE WHERE COMMUNICATION OR CNP SUPPLY CONDUCTOR IS INSTALLED.

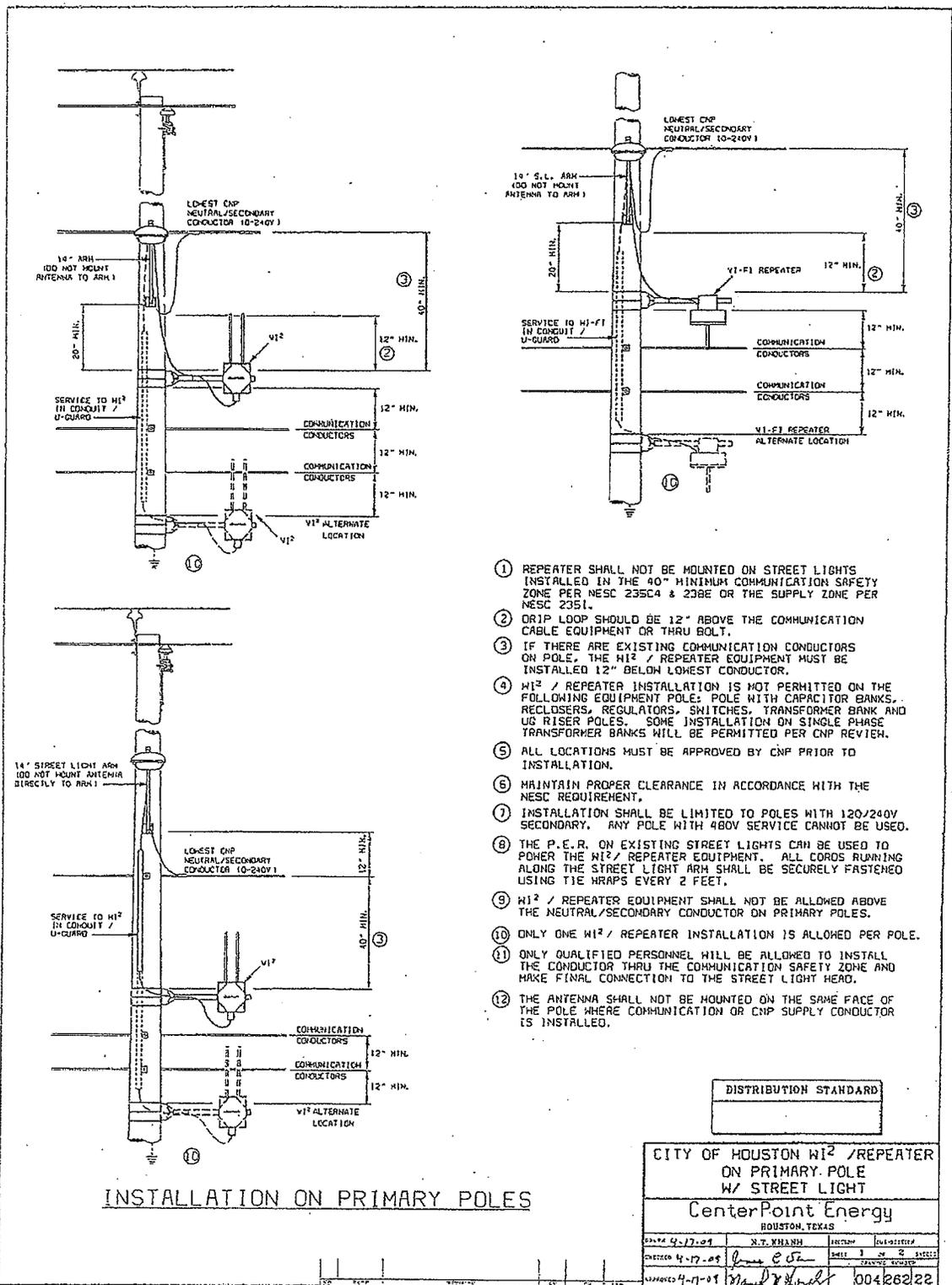
INSTALLATION ON SECONDARY POLES

DISTRIBUTION STANDARD

CITY OF HOUSTON W12 / REPEATER ON SECONDARY POLE W/ STREET LIGHT

CenterPoint Energy

HOUSTON, TEXAS			
DESIGN 4-17-04	H.T. KHANH	ISSUES	0
DESIGN 4-17-04	John C. De	REV. 2	2
ISSUED 4-17-04	Manuel W. Hoyle	APPROVED	00428222

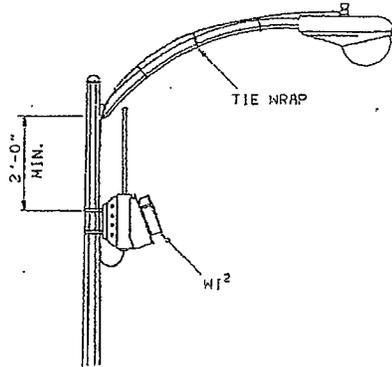


- ① REPEATER SHALL NOT BE MOUNTED ON STREET LIGHTS (INSTALLED IN THE 40" MINIMUM COMMUNICATION SAFETY ZONE PER NESC 235C4 & 238E OR THE SUPPLY ZONE PER NESC 235L).
- ② DRIP LOOP SHOULD BE 12" ABOVE THE COMMUNICATION CABLE EQUIPMENT OR THRU BOLT.
- ③ IF THERE ARE EXISTING COMMUNICATION CONDUCTORS ON POLE, THE W12 / REPEATER EQUIPMENT MUST BE INSTALLED 12" BELOW LOWEST CONDUCTOR.
- ④ W12 / REPEATER INSTALLATION IS NOT PERMITTED ON THE FOLLOWING EQUIPMENT POLE: POLE WITH CAPACITOR BANKS, RECLOSERS, REGULATORS, SWITCHES, TRANSFORMER BANK AND US RISER POLES. SOME INSTALLATION ON SINGLE PHASE TRANSFORMER BANKS WILL BE PERMITTED PER CNP REVIEW.
- ⑤ ALL LOCATIONS MUST BE APPROVED BY CNP PRIOR TO INSTALLATION.
- ⑥ MAINTAIN PROPER CLEARANCE IN ACCORDANCE WITH THE NESC REQUIREMENT.
- ⑦ INSTALLATION SHALL BE LIMITED TO POLES WITH 120/240V SECONDARY. ANY POLE WITH 480V SERVICE CANNOT BE USED.
- ⑧ THE P.E.R. ON EXISTING STREET LIGHTS CAN BE USED TO POWER THE W12 / REPEATER EQUIPMENT. ALL CORDS RUNNING ALONG THE STREET LIGHT ARM SHALL BE SECURELY FASTENED USING TIE WRAPS EVERY 2 FEET.
- ⑨ W12 / REPEATER EQUIPMENT SHALL NOT BE ALLOWED ABOVE THE NEUTRAL/SECONDARY CONDUCTOR ON PRIMARY POLES.
- ⑩ ONLY ONE W12 / REPEATER INSTALLATION IS ALLOWED PER POLE.
- ⑪ ONLY QUALIFIED PERSONNEL WILL BE ALLOWED TO INSTALL THE CONDUCTOR THRU THE COMMUNICATION SAFETY ZONE AND MAKE FINAL CONNECTION TO THE STREET LIGHT HEAD.
- ⑫ THE ANTENNA SHALL NOT BE MOUNTED ON THE SAME FACE OF THE POLE WHERE COMMUNICATION OR CNP SUPPLY CONDUCTOR IS INSTALLED.

DISTRIBUTION STANDARD

INSTALLATION ON PRIMARY POLES

CITY OF HOUSTON W12 / REPEATER ON PRIMARY POLE W/ STREET LIGHT			
CenterPoint Energy HOUSTON, TEXAS			
DATE 4-17-09	N.T. KHANH	INCHES	UNASSIGNED
CHECKED 4-17-09	James C. De...	SHEET 1	OF 2 SHEETS
APPROVED 4-17-09	James C. De...	DRAWING NUMBER 00426222	



NOTES ON STREETLIGHT STANDARDS:

1. INSTALLATION SHALL BE LIMITED TO 120/240 VOLT COBRA STYLE STREETLIGHT ONLY.
2. WI² CANNOT BE INSTALLED IN THE FOLLOWING STANDARDS:
 - * STANDARDS SERVED BY OVERHEAD WIRING
 - * DECORATIVE STREETLIGHT STANDARDS
 - * STANDARDS WITH EXISTING WI² OR OTHER ADDITIONAL EQUIPMENT INSTALLED.
3. WI² SHALL NOT BE INSTALLED ON STREETLIGHT STANDARDS WITH SIGN OF QUESTIONABLE STRUCTURAL INTEGRITY. THE FOLLOWING ARE INDICATIONS THAT THE STANDARD IS NOT SUITABLE FOR ADDITIONAL LOADING:
 - * RUST PENETRATING INTO OR THROUGH THE BASE METAL, WELDS, BASE PLATE, ANCHOR BOLTS OR ANCHOR NUTS
 - * DENTED OR BROKEN SURFACES OR WELDS INDICATING VEHICLES OR OTHER OBJECTS HAVE IMPACTED DAMAGED THE STANDARD
 - * LEANING, BOWED OR BENT STANDARD.
4. ALL CABLES MUST BE SECURELY ATTACHED TO THE STREETLIGHT ARM WITH TIE WRAPS EVERY TWO FEET.
5. DRILLING OF POLE WILL NOT BE PERMITTED.
6. BANDS FOR BRACKET INSTALLATION MUST BE INSTALLED A MINIMUM OF 6" AWAY FROM THE ARM'S SIMPLEX FITTING.
7. ALL LOCATIONS MUST BE APPROVED BY CNP PRIOR TO INSTALLATION.

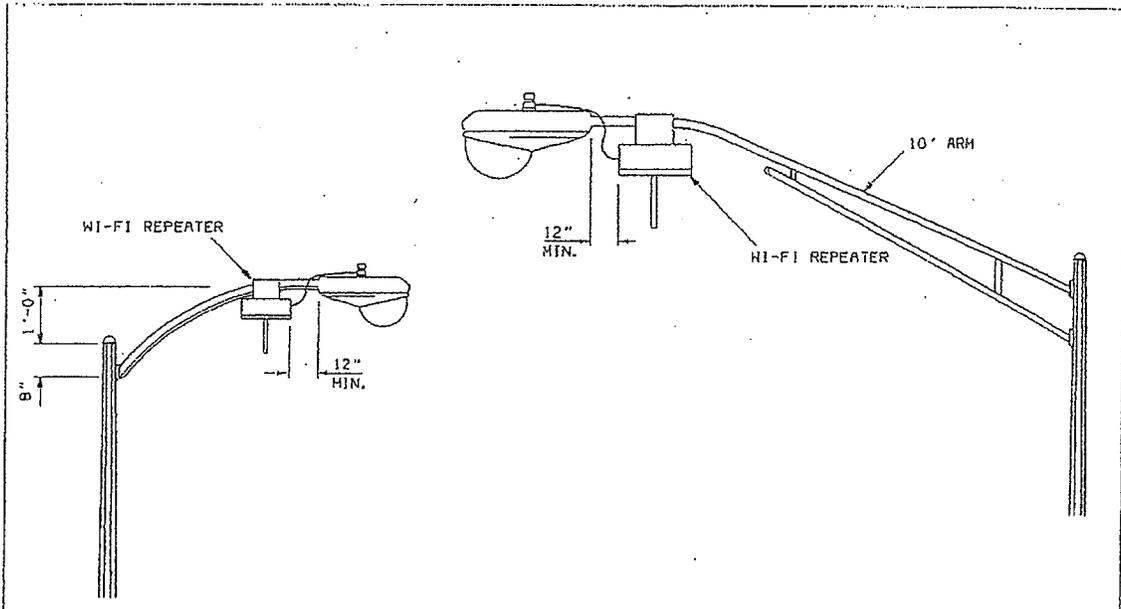
DISTRIBUTION STANDARD

CITY OF HOUSTON WI²
ON STEEL STREETLIGHT STANDARD

CenterPoint Energy
HOUSTON, TEXAS

DATE 9-17-07	N.T. KHANH	DESIGN
CHECKED 4-19-09	<i>[Signature]</i>	SCALE 1 OF 1 SHEET
APPROVED 4-17-09	<i>[Signature]</i>	REVISED 04/19/09

1004262/23



NOTES ON STREETLIGHT STANDARDS:

1. INSTALLATION SHALL BE LIMITED TO 120/240 VOLT COBRA STYLE STREETLIGHT ONLY.
2. STREETLIGHT STANDARDS WITH SINGLE ARM ATTACHMENTS ONLY.
3. WI-FI CANNOT BE INSTALLED IN THE FOLLOWING STANDARDS:
 - * STANDARDS SERVED BY OVERHEAD WIRING
 - * DECORATIVE STREETLIGHT STANDARDS
 - * STANDARDS WITH EXISTING WI-FI OR OTHER ADDITIONAL EQUIPMENT INSTALLED.
4. REPEATER SHALL NOT BE INSTALLED ON STREETLIGHT STANDARDS WITH SIGN OF QUESTIONABLE STRUCTURAL INTEGRITY. THE FOLLOWING ARE INDICATIONS THAT THE STANDARD IS NOT SUITABLE FOR ADDITIONAL LOADING:
 - * RUST PENETRATING INTO OR THROUGH THE BASE METAL, WELDS, BASE PLATE, ANCHOR BOLTS OR ANCHOR NUTS
 - * DENTED OR BROKEN SURFACES OR WELDS INDICATING VEHICLES OR OTHER OBJECTS HAVE IMPACTED DAMAGED THE STANDARD
 - * LEANING, BOWED OR BENT STANDARD.
5. ONLY ONE REPEATER INSTALLATION PER STANDARD WILL BE ALLOWED. MAXIMUM WEIGHT TO BE MOUNTED TO ARM IS 25 LBS.
6. REPEATER SHALL BE MOUNTED AT LEAST 12" FROM LUMINARIES HEAD.
7. ALL CABLES MUST BE SECURELY ATTACHED TO THE STREETLIGHT ARM WITH TIE WRAPS EVERY TWO FEET.
8. ALL LOCATIONS MUST BE APPROVED BY CNP PRIOR TO INSTALLATION.

DISTRIBUTION STANDARD

CITY OF HOUSTON REPEATER ON STEEL STREETLIGHT STANDARD

CenterPoint Energy
HOUSTON, TEXAS

DESIGN 4-17-09	N.T. KHANH	ENGINEER
CHECKED 4-17-09	<i>James C. [Signature]</i>	SEAL
APPROVED 4-17-09	<i>Manu [Signature]</i>	1004282/21



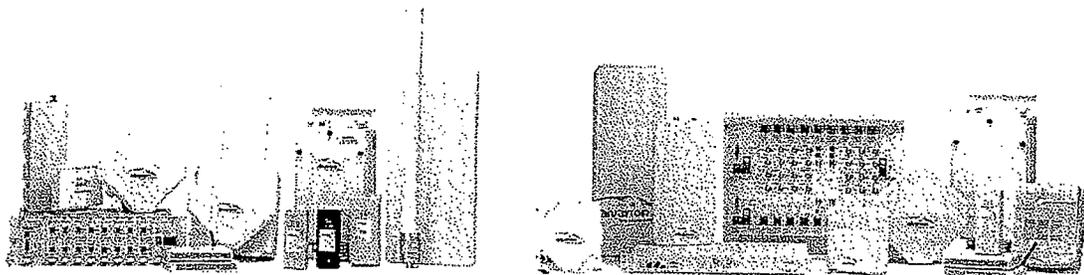
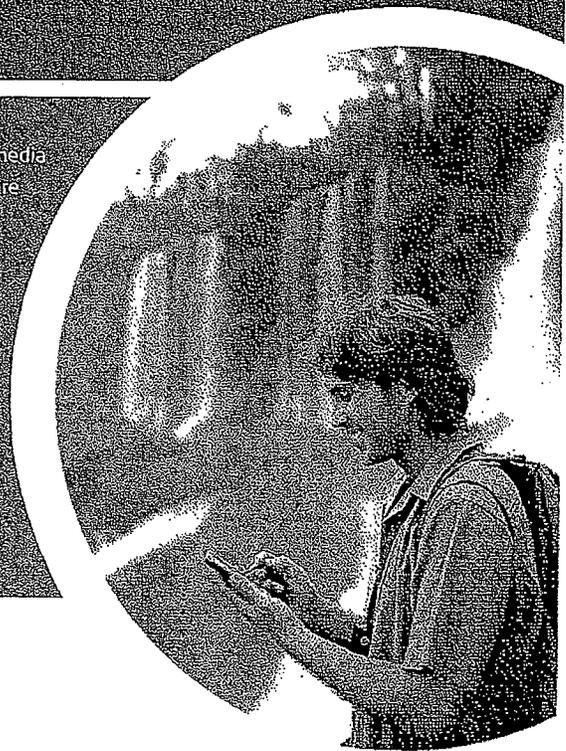
BreezeMAX™ Wi² & BreezeACCESS® Wi²

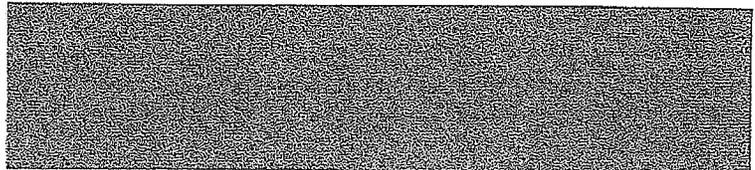
Personal Broadband Solution

Today's lifestyles mean an ever-growing thirst to receive data, voice and multimedia services anytime, anywhere. And to meet this demand, operators of all types are building advanced broadband networks using various technologies—from Wi-Fi and WiMAX—to provide Personal Broadband Services.

But regardless of the specific technology chosen, the ideal infrastructure must be robust and sufficiently flexible to deliver Personal Broadband Services today while giving the ability to transition to future technologies. The goal is to offer end-users improved productivity, lifestyles, and convenience over a sustained period.

For deploying a Personal Broadband network today, Alvarion's combination of the best of Wi-Fi access with the robust and quality-of-service of WiMAX is the perfect solution.





Personal Broadband services, or the convenience of having all your communication services delivered to you on a handheld device anytime, anywhere, is the ultimate in method to increase user productivity and convenience. Personal Broadband can best be provided today by a combination of Wi-Fi for access and WiMAX for backhaul.

Alvarion's WiMAX / Wi-Fi hybrid system does just that in being a powerful, yet cost-effective converged network that unites Wi-Fi hotspots with WiMAX backhaul to provide Personal Broadband services. As a converged system, it also gives operators the ability to migrate to a fully Mobile WiMAX network with managed services for Personal Broadband users.

Operating in both licensed and licensed-exempt frequencies, the BreezeMAX Wi² and BreezeACCESS Wi² leverage the availability of Wi-Fi technology – along with the power and robustness of WiMAX quality-of-service (QoS) – to answer critical public and private sector needs. Applications include traffic management, video surveillance, public Internet access, homeland security, and nomadic services.

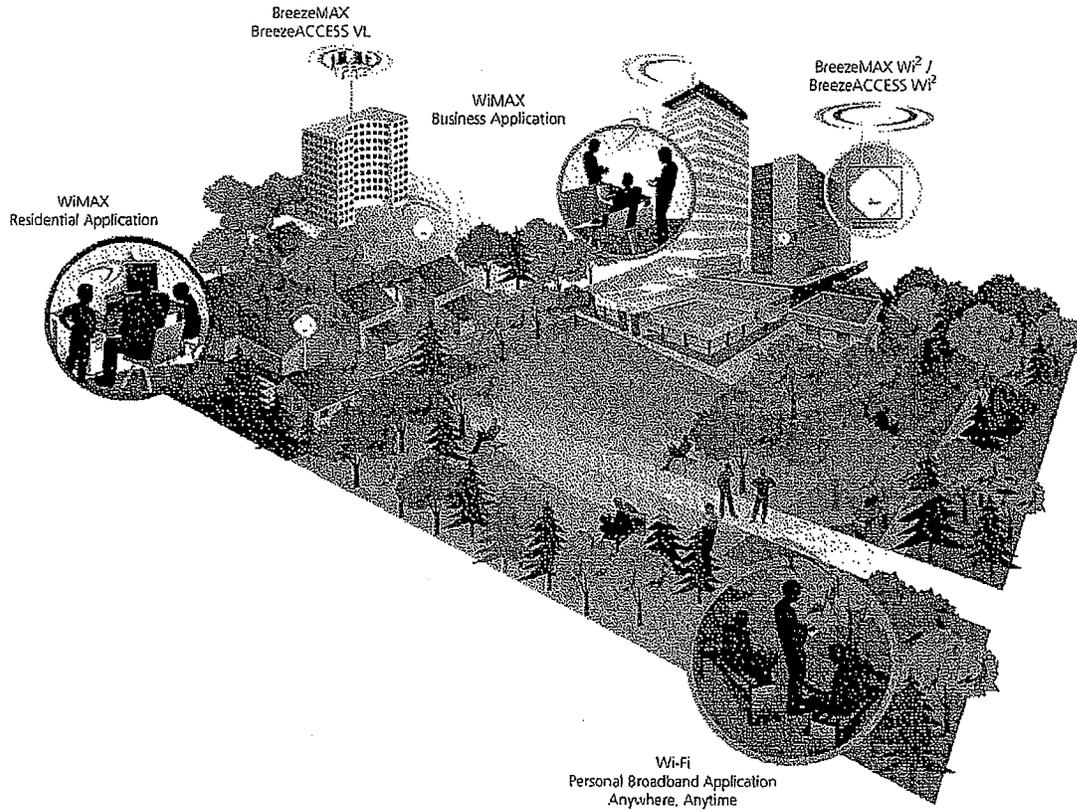
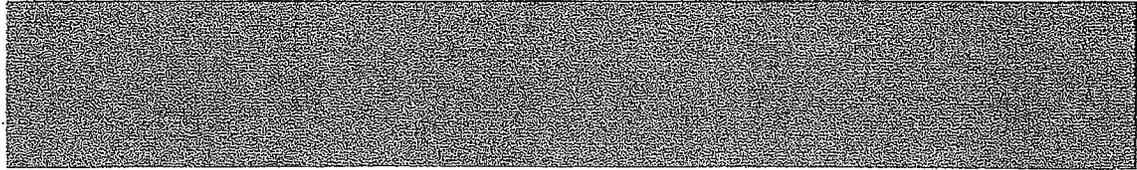
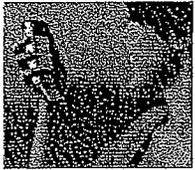
All Outdoor Combined WiMAX / Wi-Fi solution

The system combines a fully ruggedized, outdoor Wi-Fi access point with a WiMAX CPE for backhaul. With its advanced software, BreezeMAX Wi² and BreezeACCESS Wi² can be deployed almost anywhere to provide broadband access to standard Wi-Fi (IEEE 802.11 b/g) end user devices.

Used in conjunction with Alvarion's market-leading BreezeMAX or BreezeACCESS VL base stations, it can be used to expand the existing capabilities of WiMAX at 2.X, 3.X and 5.X GHz. Using BreezeMAX Wi² and BreezeACCESS Wi², a WiMAX or pre-WiMAX network can be used to provide Personal Broadband services to high-end business as well as residential users equipped with Wi-Fi enabled devices such as laptops, PDAs, smart phones, and portable gaming devices.



BreezeMAX Wi² and BreezeACCESS Wi² are self-contained, robust all-outdoor systems that require only a single connection to either AC or DC power. With its easy installation and operation, high performance, and rich security and QoS features, BreezeMAX Wi² and BreezeACCESS Wi² are ideal solutions for operators, municipalities and communities looking to build metropolitan broadband networks or to integrate Wi-Fi hot zone capabilities into their existing WiMAX and pre-WiMAX networks. The result is Personal Broadband services ranging from public Internet access to public safety and Intranet applications.



Economic Advantages

- Converged network serving mobile Wi-Fi users using WiMAX/pre-WiMAX networks yielding significant installation and operations savings
- Rich set of secure differentiated service levels enabling Intranet, public access, and homeland security applications over one network
- Migration path to a 802.16e Mobile WiMAX network
- Low maintenance costs using comprehensive AlvariSTAR network management system with high service availability and optional OSS for user management

Technical Advantages

- Future-ready modularity and flexibility to integrate new technologies such as 802.16e and MIMO
- Supports WiMAX/pre-WiMAX operation in 2.X, 3.X and 5.X GHz
- Rich features including end-to-end QoS, virtual AP, VLAN and VLAN mapping, and 802.11i and 802.1x security
- Comprehensive full solution combining BreezeACCESS VL or BreezeMAX for backhauling with a robust high power and feature rich Wi-Fi 802.11 b/g access point

Headquarters

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For the latest contact information in your area, please visit:

www.alvarion.com/company/locations



www.alvarion.com

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Specifications

Wi-Fi Access Point Specifications

Data Rates
802.11g: 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps per channel
802.11b: 1, 2, 5.5, 11 Mbps per channel

Maximum Channels
FCC/AC: 1-11
ETSI: 1-13
Japan: 1-14

Maximum Clients
128 for the radio interface set to access point mode

Modulation Types
802.11g: CCK, BPSK, QPSK, OFDM
802.11b: CCK, BPSK, QPSK

Operating Frequency
802.11b/g:
2.4 ~ 2.4835 GHz (US, Canada, ETSI)
2.4 ~ 2.497 GHz (Japan)

Network Management
Web-management, Telnet, SNMP

Wi-Fi Access Point Specifications

802.11g	6 Mbps	9 Mbps	12 Mbps	18 Mbps	24 Mbps	36 Mbps	48 Mbps	54 Mbps
TX power (dbm)	20	20	20	20	20	19	19	18
RX sensitivity (dbm)	-91	-90	-89	-88	-84	-80	-75	-73

802.11b	1 Mbps	2 Mbps	5.5 Mbps	11 Mbps
TX power (dbm)	20	20	20	20
RX sensitivity (dbm)	-96	-93	-93	-90

SW Features

Layer 2 Features
Bridge mode
VLAN (Guest, Default, Dynamic RADIUS-based)
Spanning Tree (802.1D and 802.1W)

Security Features
WEP, AES
WPA/TKIP over 802.1x & PSK
802.11i/WPA2
802.1x supplicant mode
Rogue AP Prevention via 802.1x
Static Port Security (MAC-based) (Mac 1024)

Physical Dimensions

Physical Size
32.9 x 27.8 x 21.1 cm (13.0 x 11.0 x 8.3 in) H x W x D

Weight
7.0 kg (49.37 lbs)

Radio Signal Certification
FCC Part 15.247 (2.4 GHz)
EN 300.328, EN 302.893
EN 300 826, EN 301.489-1, EN 301.489-17
ETSI 300.328; ETS 300 826 (802.11b)

Safety
UL/CUL (CSA60950-1, UL60950-1)
CB (IEC 60950-1)
UL/GS (EN60950-1)

Wireless Radio/Regulatory Certification
ETSI 300 328 (11b/g), 301 489 (DC power)
FCC Part 15C 15.247/15.207 (11b/g), Wi-Fi, DGT, TELEC, RSS210(Canada)

Electromagnetic Compatibility
CE Class B (EN55022)
CE EN55024,
IEC61000-3-2, IEC61000-3-3,
IEC61000-4-2, IEC61000-4-3,
IEC61000-4-4,
IEC61000-4-5, IEC61000-4-6,
IEC61000-4-8, IEC61000-4-11
FCC Class B Part 15
VCCI Class B
ICES-003 (Canada)

Standards
IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX,
IEEE 802.11 b, g

Antenna Specifications
2x 8 dBi Omni directional (2.4-2.5GHz)

Close System - Hiding SSID from Beacon
RADIUS authentication
Access Control List (Mac SA, DA, Ether Type)
Multiple SSID (BSSID, Virtual AP's) - 4 per Wireless Interface

QoS
WRR (Weighted Round Robin)
Strict Priority scheduling
802.11e (WMM baseline)

Hotspot
Prevent Communication between

Wireless Clients
RADIUS Accounting (AAA)
Background Scan & Rouge AP detection
802.11f - IAPP Roaming (draft 2.2)
802.11d Broadcast Country Code

Management
SNMP (v1, v2c, v3)
Web access + HTTPS and SSL (Secured Web)
Telnet + SSH V1.5 & V2 (Secured Telnet session)
SNTP

EMC Compliance (Class B)
FCC Class B (US)
RTTED 1999/5/EC
DGT (Taiwan)

*For backhaul specifications, please see BreezeMAX or BreezeACCESS VL documentation as appropriate
*For further information, please contact your local Alvarion sales representative



Knowledge to Shape Your Future

Fixed Network 2.0 Repeater

The Itron Fixed Network 2.0 Repeater is a network component that continuously forwards meter data from nearby endpoints to the Fixed Network 2.0 Cell Control Unit (CCU). The CCU, in turn, communicates the information to the Fixed Network application software.

Repeaters communicate with endpoints and the CCU in the 900 MHz radio band. All the endpoints are in an auto-discovery mode for repeaters. All repeaters are in a similar auto-discovery mode for the CCUs.

Automatic functions performed by the Fixed Network 2.0 Repeater include:

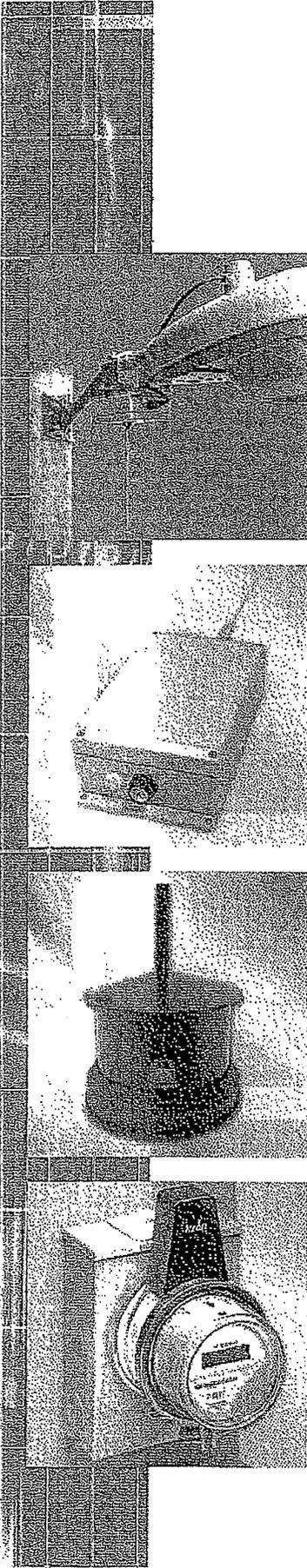
- > Auto-discovery of the endpoints under its footprint
- > Forwards positive outage (PON) and restoration notices, enabling accurate and timely outage detection
- > Multi-channel frequency hopping
 - > Scans for meter transmissions
 - > Decodes and validates packets
 - > Filters packets – reduces transmissions of recent and frequently heard meters
 - > Retransmits packets on a new channel away from endpoint channels
- > Sends status message to CCU for network troubleshooting

Repeaters provide the following benefits in a Fixed Network 2.0 deployment:

- > Expand network coverage into hard-to-read areas, due to topography or other signal disturbances
- > Help provide a very cost-effective fixed network solution
- > Add flexibility for network layout
- > Increases read redundancy

The Fixed Network 2.0 Repeater comes in four models:

- > Pole-Mount Repeater
- > Wall-Mount Repeater
- > Decorative-Mount Repeater
- > Sleeve-Mount Repeater (not available with PON)



Functional

- > Power source: single-phase 120-240V AC auto-ranging
- > Power consumption: 1.5W, 1kWh a month
- > Operating and storage temperatures: -40°C to +85°C (-40°F to +185°F)
- > Operating humidity: 5 to 95% non-condensing relative humidity
- > Product identification: numeric and bar-coded repeater module serial number
- > FCC compliance: Part 15 certified
- > ANSI compliance: C12.1 standards

Operational

- > Receive/Transmit frequency range: 908-924 MHz
- > Data integrity: verified in every data message

Physical Dimensions

Sleeve-Mount Repeater

- > Meter sleeve mount: J4S, J5S
- > Height: 11.0" (27.94 cm)
- > Width: 6.875" (17.46 cm)
- > Depth: 4.25" (10.8 cm)
- > Weight: 2.2 lbs.

Wall-Mount Repeater

- > Height: 5.5" (14.0 cm)
- > Width: 9.5" (24 cm)
- > Depth: 2.75" (7.1 cm) without antenna
- > Weight: 4.0 lbs.

Decorative-Mount Repeater

- > Diameter: 6" (15.24 cm)
- > Height: 7.5" (19.0 cm)
- > Weight: 1.8 lbs.

Pole-Mount Repeater

- > Height: 5.5" (14.0 cm)
- > Width: 9.5" (24 cm)
- > Depth: 2.75" (7.1 cm) without antenna
- > Weight: 4.0 lbs.

Itron Inc.

Itron is a leading technology provider and critical source of knowledge to the global energy and water industries. Nearly 3,000 utilities worldwide rely on Itron technology to deliver the knowledge they require to optimize the delivery and use of energy and water. Itron delivers value to its clients by providing industry-leading solutions for electricity metering; meter data collection; energy information management; demand response; load forecasting, analysis and consulting services; distribution system design and optimization; web-based workforce automation; and enterprise and residential energy management.

To know more, start here: www.itron.com



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Publication 100438SP-02
1/07

**CENTERPOINT ENERGY
POLE ATTACHMENT GUIDELINES AND PROCEDURES**

This section addresses general pole safety information, including descriptions of the various chemical wood pole preservatives, pole warning markers, pole climbing precautions and construction safety practices.



**Public
Safety**

CENTERPOINT ENERGY POLE ATTACHMENT GUIDELINES AND PROCEDURES

GENERAL CONSTRUCTION SAFETY

Attaching companies are reminded that CNP's distribution poles are part of an overhead electrical distribution system. The power lines attached to these poles should be presumed energized, and all persons, including attaching companies' employees and contractors, must exercise caution and take all reasonable precautions when working on or near electric utility poles and/or near high-voltage lines.

CNP's employees and contractors are specially trained to perform their jobs safely by applying basic safety principles, especially around high voltage lines. Likewise, CNP strongly urges attaching companies to stress to their employees and contractors the importance of electrical safety.

SAFETY REGULATIONS AND REQUIREMENTS

Certain Federal regulations and Texas statutes directly address construction activity in the vicinity of overhead electric lines, and violators are subject to criminal penalties and civil liabilities. These laws apply to employers, contractors, owners and any other parties or persons responsible for or engaged in construction activities. Two such statutes are briefly discussed below.

TEXAS LAW - As per *Chapter 752* of the Texas Health & Safety Code, construction activity is prohibited if such work creates the possibility that anything – including a worker, tool, piece of machinery, etc. – may come within *six (6)* feet of an energized overhead high voltage power line.

FEDERAL LAW - As per OSHA (Occupational Safety & Health Administration) requirements contained in the Code of Federal Regulations (Title 29, Part 1910.180, 1910.333, 1926.416, 1926.417 and 1926.550), cranes and other similar pieces of equipment capable of movement during operation must maintain a minimum distance of *ten (10)* feet from high voltage electric lines.

SAFETY BROCHURES AND INFORMATION

Examples of several CNP safety pamphlets, including Construction Safety and the Law, which provides valuable information about working around power lines, are shown on pages 7 of 10, 8 of 10 and 9 of 10 in this section. Actual copies of these pamphlets and other safety information are available through CNP's Public Safety Department.

The primary responsibility of CNP's Public Safety Department is to promote electric safety awareness to the public through seminars and demonstrations. For more specific safety information or to arrange for free safety demonstrations, attaching companies are encouraged to contact CNP's Public Safety Department at 713-945-6707.

NOTICE OF PROPOSED CONSTRUCTION FOR COMMUNICATIONS CABLE ATTACHMENTS

Should it be necessary for an attaching company to conduct construction activity near overhead power lines, the attaching company should contact CNP at 713-207-2222 prior to beginning any work. Arrangements can be made for the involved lines to be de-energized and/or moved for the duration of the work.

NOTICE OF REPAIR, MAINTENANCE, OR MODIFICATION OF ANTENNA ATTACHMENTS

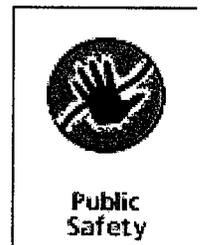
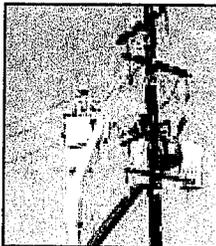
Prior to performing any planned or emergency repair, maintenance or modification to an existing antenna attachment, attaching company must obtain authorization from CNP to work within the electrical supply space.

EMERGENCY SITUATIONS

In the event of contact by construction equipment with overhead or underground electric lines, call 713-207-8000 or 713-207-1398 and provide information as to the location of the incident and whether the situation is life threatening.

VEGETATION TRIMMING

Attaching company shall be responsible for any vegetation trimming necessary on or around its physical attachments in compliance with applicable law.



CENTERPOINT ENERGY

POLE ATTACHMENT GUIDELINES AND PROCEDURES

CHEMICAL WOOD POLE PRESERVATIVES

As a part of its ongoing pole maintenance, CNP employs a groundline treating program whereby its wooden distribution poles are systematically inspected to identify poles requiring preservative treatments, structural reinforcement or replacement.

All of CNP's wooden distribution poles are treated with some form of chemical wood preservative. Some of CNP's poles are treated with a chemical called pentachlorophenol, but the more common treatment is with either CCA (chromated copper arsenate) or creosote. These chemicals protect poles against insect damage and rotting, thereby increasing the serviceable life of the poles.

Because of the presence of these preservative chemicals, persons should wear protective clothing and gloves when climbing CNP's poles. Even accidental contact with chemically treated poles can cause skin irritation and related problems. Should bare skin come into contact with a treated pole surface, the exposed skin area should be thoroughly washed with soap and water. Similarly, a pole splinter piercing the skin should not be allowed to dissolve. The splinter should be promptly removed and the wound washed and thoroughly disinfected.

POLE WARNING MARKERS

As a part of its groundline treating program, CNP identifies poles which are safe for climbing and poles which should not be climbed. Several types of metal tags and flags are used to identify the condition of CNP's poles. These tags also designate poles which have been inspected and/or subjected to a chemical treatment process. Some samples of the various tags and flags are shown on pages 4 of 10, 5 of 10, 6 of 10 and 7 of 10 in this section.

Poles marked with *round* or *oval* metal tags may be climbed. *Oval* tags designate poles which have been inspected and are deemed safe for climbing without any preservative treatment. *Round* tags designate poles which have been inspected, subjected to some form of chemical preservative treatment and are deemed safe for climbing.

Certain poles have been identified and tagged as poles that should **not** be climbed under any circumstances. These poles are often scheduled for reinforcement or replacement and are identified by *two* types of tags. Poles displaying one or more *rectangular* metal tags are scheduled for reinforcement or replacement and should not be climbed. Some poles are marked with *colored* flags (usually red, yellow or orange). A pole bearing **any** color flag should not be climbed.

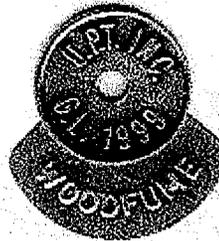
NOTE: *In all situations, it is still the responsibility of any persons having reason to climb CNP's poles in performance of their job to first satisfy themselves as to the structural integrity of poles prior to climbing.*

**CENTERPOINT ENERGY
POLE ATTACHMENT GUIDELINES AND PROCEDURES**

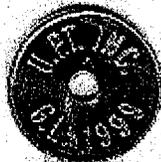
ASPLUNDH POLE TAG LEGEND



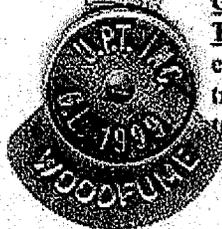
Groundline Treatment Tag - A round tag applied to each treated pole, indicating the current year. An excavated and externally treated pole.



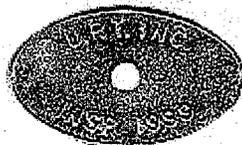
Groundline Treatment Tag & WoodFume Tag. Pole was externally treated. Pole was also fumed due to internal decay or entire circumference could not be excavated due to obstructions.



Groundline Treatment Tag & Internal Treatment Tag. Pole was externally treated. Pole was also internally treated due to voids.

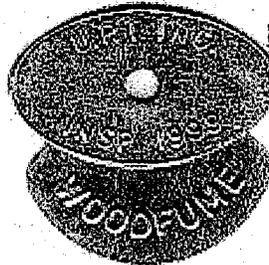


Groundline Treatment, Internal Treatment, & WoodFume Tags. Pole was externally treated. Pole was also internally treated. Fuming is used as a cap to the internal treatment.

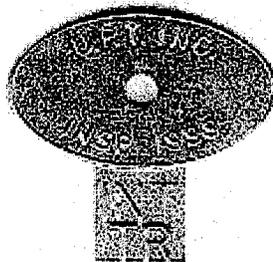


Sound & Bore Tag. Pole could not be excavated due to roots, pavement, etc. Also used for Pullback inspections on South Western Bell Poles.

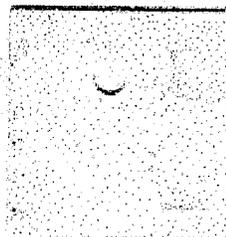
**CENTERPOINT ENERGY
POLE ATTACHMENT GUIDELINES AND PROCEDURES**



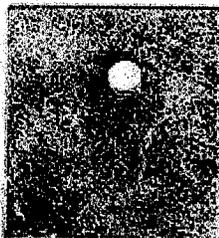
Sound & Bore Tag & WoodFume Tag. Pole could not be excavated. Treated internally with Fumigant.



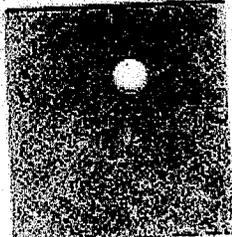
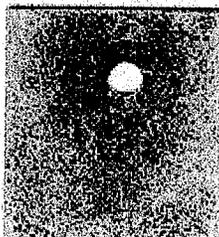
Sound & Bore Tag & Internal Treatment Tag. Pole could not be excavated. Treated internally.



Reinforcable Reject Tag. A pole that has fallen below safety standards based on decay below groundline but has sound wood above groundline and can be braced with a steel truss or some other means to remain in service.



Reject Tag. A pole that has fallen below safety standards.

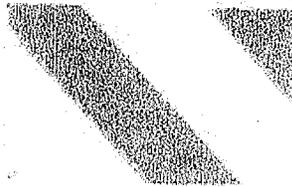


Priority Tags. Poles which require immediate replacement from the standpoint of timber strength alone, regardless of guying, etc. Tags can be side-by-side or 1 above the other.

CENTERPOINT FLAGGING LEGEND



**PRIORITY
REPLACEMENT POLE**



**NORMAL
REPLACEMENT POLE**

BRACEABLE POLE

CENTERPOINT ENERGY POLE ATTACHMENT GUIDELINES AND PROCEDURES

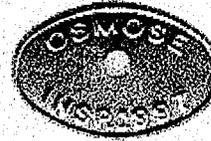


OSMOSE WOOD PRESERVING, INC.
980 ELLICOTT STREET • BUFFALO, NY 14209-3498
(716) 882-5905 • FAX (716) 882-5159

These tags represent poles which have been inspected and passed. A "TREATED" pole has been excavated and externally treated with OsmoPlastic[®], an EPA-registered preservative, to extend its serviceable life. An "INSPECTED" pole has been sounded and bored without excavation and has not been groundline treated.

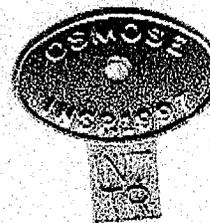
TREATED

INSPECTED



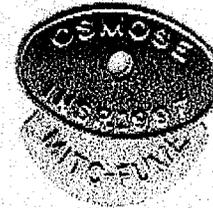
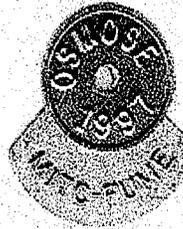
An "INTERNAL TREAT" Pole has an internal decay pocket, hollow heart, or insect galleries, but still has enough strength to remain in service. An EPA-approved liquid preservative, Hollow Heart[®], has been applied under approximately 40 pounds of pressure. This tag is suspended below one of the above inspection tags.

INTERNAL TREAT



The "FUMIGANT TREAT" pole has been inspected and treated. It has been treated with MITC, an EPA-approved fumigant, according to label directions. This tag is suspended below one of the above inspection tags.

FUMIGANT TREAT



A pole so marked is a "REJECT". It should be replaced (white tag) or reinforced (yellow tag). Reinforceable poles may be treated with OsmoPlastic[®] to help retain what sound wood does remain.

REJECTED

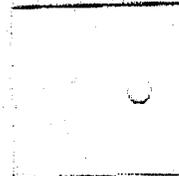
DO NOT CLIMB!



This is a hazardous pole and requires immediate attention. It should be replaced (white tags) or reinforced (yellow tags).

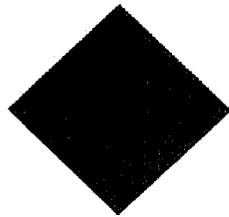
PRIORITY POLE

DO NOT CLIMB!

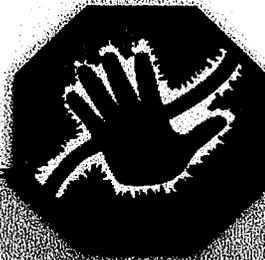


CONSERVING FOREST RESOURCES

**CENTERPOINT ENERGY
POLE ATTACHMENT GUIDELINES AND PROCEDURES**



**Watch out for power lines...
electrical contact can kill.**



**SAFETY
ON THE JOB**

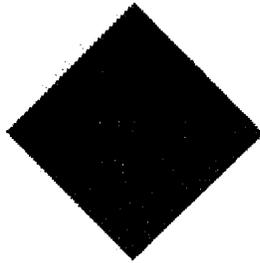
**Electrical Safety Guidelines
for General Contractors**

CenterPoint Energy

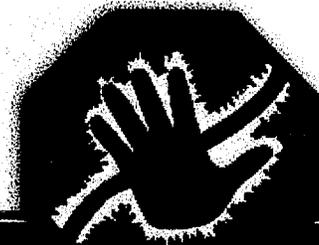


09/02

**CENTERPOINT ENERGY
POLE ATTACHMENT GUIDELINES AND PROCEDURES**



**Watch out for power lines...
electrical contact can kill.**



**SAFETY
ON THE JOB**

Guidelines for Utility and
Communication Workers

CenterPoint Energy



09/02



Construction Safety and the Law

*The Facts About Working Safely
Around Power Lines*

CenterPoint Energy