May 17, 2017

Conversation with

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Roque Bamba, Manager of Project Management

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* PSE uses third party contractor for most electric and gas work. Quanta Service Company parent of Portelco that does electric work and InfraSource that does natural gas work.
* PSE contract pays a per unit price (typically the labor cost split between COR and new addition is a percentage)
* PSE uses in house professionals for substation work
* PSE has linemen that will respond to emergency like a pole hit by a car at night. The lineman will call Portelco if the poles needs replaced.
* Planned projects are bid out.
* Adding tree wire, which is a plastic-coated wire that does not conduct the electricity to a limb fallen on the wires.
* Also, adding insulation to 2 of the three conductors so if it a limb lays across it will not have two exposed to conduct electricity

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| **Aerial Electric Distribution Facilities**  Site visit coordinator:  Ryan Murphy, Manager Construction Performance Management 425-223-2116 |  |
| **Kenmore (KNM-26) Feeder Re-conductor**  Reliability improvement project relocating facilities for improved accessibility and upgrading to tree wire conductor.  Potelco On-site Contact:  Andy Clouser 253-380-9536 | NE 195th St, Kenmore |

* Dean Davis, Foreman
* The project is to move the distribution feeder from under the transmission lines which is hard to get to with the trucks and service the lines.
* Moving the distribution feeder to the street for easier access
* So upgrading down the road from one phase to three phase to move the distribution feeder
* The pole line being replaced is 1978 vintage
* After electric removes facilities it cuts off the top of the pole, each utility cuts off pole and they finish the transfer to new pole. Last utility on pole removes the remaining pole stub

Pictures

1. Old pole topped off next to new pole, still need to finish transferring transformer to new pole
2. New corner pole, putting two cross arms on pole, will continue single phase one way to serve a couple house.
3. Contractor truck sign
4. The current distribution feeder under transmission down an alley
5. From the current distribution feeder location to the new pole installation
6. Feeder going underground next to transmission pole
7. Pole from the 1960s
8. Transformer connected to underground from picture 6

**Kenmore (KNM-27) Pole Replacement**

Pole replacement for adequate above-ground clearance and space separation between electric and communications utility attachments.

Potelco On-site Contact:

Andy Clouser 253-380-9536

* Adding new insulators
* Project we saw they were putting in new span pole since the communication wire needed to rise above the high elevation house.
* the current wires is raised and held by bucket truck to install new insulators
* poles line 1967 vintage

Pictures

1. Getting ready to install new insulators
2. Vacuum and water used to excavate hole for new pole
3. Top bucket holding wire up while installing new insulators

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| **Transmission and Distribution Substation**  **Lakeside Substation Rebuild**  Improve reliability for 114,000 customers in Bellevue, Issaquah, Kirkland and Newcastle areas by rebuilding Lakeside 115 kV Switching Station; replace aging equipment with new equipment in a more effective and reliable layout.  On-site contact: Cody Spence (425) 466-8946 | 13635 SE 26th, Bellevue 98004 |

* Transmission only switch yard
* Uses breaker and half scheme
* 3 transmission lines coming in at 115 voltage
* Has a double bus system
* Gas switch FX6 by sieman
* Adding similar configuration which will handle two more transmission feeds of 230 voltage
* Project was to add reliability in the system and accommodate load growth
* Built new control building and demolished old control building. Used old control equipment for spares
* Transmission feeder pole coming to substation is from 1960

Pictures

1. New switches and double bus. Started using October 2016
2. Base for poles, 22ft deep have to wait 28 days for concrete to cure before putting on pole
3. Forms ready for base for switch and bus structure
4. Outside of new building
5. Transmission coming to substation
6. 1960 transmission pole

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| **Underground Natural Gas Distribution Facilities**  Site visit coordinator:  John Guay, Project Manager 425-505-3768 | |  | |
| **PE IP DuPont Main Replacement**  Replacement and retirement of 8,743’ of DuPont main and associated services under PSE’s Pipeline Replacement Program (PRP)  On-site contact: Foreman Bo Bowling 425-864-9893 | 14120 SE 61st Place Bellevue, WA 98006 | |

* Replacing 1978-1983 Dupont pipes
* They know what area was installed during the time their supplier used Dupont pipes. They cut potholes to see if the main is Dupont to figure out where to do the replacement project
* This project is replacing 8990 feet of mains
* We saw the “Forest Drive” Job # 109094897
* Started the project in late Feb
* Use bendinite slurry in bore line
* If service to house replaced then they replace the riser and meter
* Main is buried 3 feet down and service buried 1 foot
* Installing new main on opposite side of street of current main, retire current main in place

Picture

1. New main under sidewalk
2. Pothole to watch the pulling of the service from main to other side of street
3. Opening for service by house, the black pipe is current main, also see electric and communications cable
4. Using a HOG, pneumatic shaking head to bore to hole by the street (picture 3)
5. Head of the HOG
6. Pulling service from the street using reverse feature of the hog
7. Hog with service
8. Hog with service out
9. Service yellow coming from street
10. Gas contractor

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| **Underground Electric Distribution Facilities**  Site visit coordinator:  Scott Keaton, Director of Operations, Potelco 425-766-0085 |  |
| **Cable Remediation Program (CRP)**  Replacement of 3,800’ of underground electric cable under PSE’s Cable Remediation Program (CRP)  Potelco General Foreman, Dan Champoux 253-606-7591 | 5205 Highland Drive in the Somerset neighborhood, Bellevue |

* Civil crew installing conduit, linemen will come later and pull in new wire
* Installing 4 inch conduit down the road for three phase distribution
* Installing 2 inch conduit to transformer for one phase to come off three phase
* The project is a reliability project to replace direct buried concentric neutral wire which will be retired in place
* Will put a hatch in the sidewalk near jbox where the 2 inch is connected to 4 inch
* Not doing service replacements

Pictures

1. 2 inch pipe to carry single phase to transformer
2. Jbox connect 4 inch conduit carrying three phase to 2 inch conduit
3. Vacuum out hole for connect 2 inch pipe to middle of street, looking for other utilities to avoid boring into them
4. Transformer and the 2 inch conduit
5. From the hole to transformer will have to vacuum dig to avoid all utilities will take 3 hours