A SEATTLE-CENTRIC INTRODUCTION TO ELECTRIC UTILITIES

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SHARING...

- Some History
- Our Fuel Sources
- Current Organization and their functions

Seattle Municipal Archives
1880-1882

- Light bulb patented by Edison
- Pearl Street Station
  - DC power near loads
NOV 15, 1886

Niagara Falls Adams Generation Station serves Buffalo, NY
  - Centralized generation and long distance transmission (26 mi)
1886-1892

• March 22, 1886: Seattle has first incandescent lighting system west of the Rockies

• Electricity usage:
  o Street Lighting
  o Streetcars, including Rainier Power and Railway Co, 1892
JULY 31, 1899

- Region’s largest hydroelectric plant
  - Snoqualmie Falls
  - Transmission via Issaquah and Renton to Seattle

pse.com and waterpowermagazine.com
1899

Pioneer Square, Seattle
- About a dozen electric light and electric trolley companies
January 10, 1905: City of Seattle generates power at Cedar Falls dam for arc lights along Seattle’s streets.

Seattle Lighting Department became Seattle City Light in 1910.

Hanging arc street lights
1930 SEATTLE CITY LIGHT’S DIABLO DAM
2017 SEATTLE CITY LIGHT POWER SOURCES

2017 SOURCES OF POWER
(in percent megawatt hours)

- GENERATED
  - Boundary
  - Skagit
  - Cedar Falls & South Fork Tolt

- TREATY
  - BC Hydro

- PURCHASED
  - BPA
  - Other

- 28.6%
- 18.2%
- 41.1%
- 8.7%
- 2.4%
- 1.0%
ELECTRICITY GENERATION

• Washington State Fuel Mix (2017)

• Seattle City Light Fuel Mix (2016)

* Others include Biomass, Other Non-Biogenic and Petroleum. Account for 0.30%.
** These fuels represent a portion of the power purchased from BPA and market purchases.
2017 USA GENERATION

The image is a map of the United States showing the distribution and size of power generation plants across different sources. The map uses various colors and sizes to represent different types of power generation, such as natural gas, coal, nuclear, hydroelectric, oil, wind, solar, and other sources. The map includes a legend and a scale for size representation. The website washingtonpost.com is credited at the bottom of the image.
ELECTRIC UTILITY GOVERNANCE

• POUs--Publicly Owned Utilities
  o Municipally Owned by local government – Seattle City Light, Dept. of City of Seattle – vertically integrated
  o Special utility districts own the electric utility (in WA PUDs) – Snohomish PUD No. 1
  o Cooperatives – members are owners – Tanner Electric Coop, North Bend, WA

• IOUs--Investor Owned Utilities
  o Privately owned by investors – PSE
  o Publicly traded and owned by shareholders – Avista
STAFFING

- Administrative Services (100)
- Cust Service, Comm, Reg Affairs (400)
- Engineering + Tech Innov (300)
- Environmental (50)
- Finance (100)
- Power Supply (250)
- Operations (700)
WHAT DO WE DO: ADMINISTRATIVE SERVICES

• Major Functional Responsibilities
  o Employee Relations
  o Labor Relations
  o Field Safety Operations
  o General Safety Program
  o Safety Metrics Reporting
  o Wellness Program Administration
  o Talent Acquisition
  o Employee Services
  o Apprenticeship
  o Workforce Development
  o RSJI
  o Facilities
  o Security
  o Emergency Management
WHAT DO WE DO: CUST SVC, COMM, REG AFFAIRS

• Major Functional Responsibilities
  o Federal & State Agencies
  o State Legislature and Congressional Relations
  o Council Legislation & Relations
  o Customer Service Engineering
  o Technical Metering
  o Customer Account Services
  o Account Executives
  o Hearing Officer
  o Credit & Collections
  o FERC/NERC & Regulatory Compliance
  o Energy Efficiency Innovation
  o Distributed Resources Programs
  o Lighting Design Lab
  o Media Relations
  o Community Outreach
  o Marketing
WHAT DO WE DO: ENGINEERING & TECH INNOV

• Major Functional Responsibilities
  o Project Management Quality Improvement
  o Distribution & Transmission Operations
  o Control Area Operations
  o **Power Systems Automation (EMS)**
  o Construction Project Management
  o Asset Planning and Assessment
  o Material/Engineering Standards
  o Geographical Information System (GIS)
  o Streetlight & Joint Use Management
  o Distribution & Transmission Engineering
  o **Distribution & Transmission System Planning**
  o Power Stations Engineering
  o Protection & Communications Engineering
  o **Grid Modernization Pilot projects**
WHAT DO WE DO: ENVIRONMENTAL

• Major Functional Responsibilities
  o Environmental Affairs
  o FERC Relicensing
  o License Implementation
  o Science Policy
  o Environmental Management & Compliance
  o Real Estate
  o Natural Resources & Permitting
  o Skagit Licensing
WHAT DO WE DO: FINANCIAL SERVICES

• Major Functional Responsibilities
  o Internal Audit
  o Benchmarking & Metric Reporting
  o Business Intelligence
  o WMBE/Small Business Initiatives
  o Budget
  o Financial Planning
  o Accounts Payable
  o Procurement & Contracting
  o General and Cost Accounting
  o Risk Control and Risk Modeling
  o Credit Risk
  o Deal Review
  o Settlements
  o Enterprise Risk Mgmt
WHAT DO WE DO: POWER SUPPLY

• Major Functional Responsibilities
  o Dam Safety
  o Generation Planning
  o Regional Affairs
  o Resource Acquisition & Wholesale Contracts
  o Strategic Planning
  o Generation Program Management
  o Generation Operations
  o Generation Engineering
  o Construction Management
  o Technical Resources
  o Power Operations & Marketing
  o Integrated Resource Planning
  o Market Analysis
  o Resource & Contract Valuation
  o Outage & Operations Planning
  o Power System Modeling & Reporting
WHAT DO WE DO: OPERATIONS

• Major Functional Responsibilities
  o Substation Operators
  o Civil Crews
  o Line Services
  o Radial Distribution Operations
  o Downtown Network Operations
  o Substation Operations
  o Vegetation Management & Landscaping
  o Protection & Controllers
  o Technical Communications
  o Shops and Fleets
  o Warehouse & Tool Rooms
LOOKING AHEAD

• Cleaner more distributed generation
  o DERs and Renewables

• Decarbonization
  • Electrification of Transportation

• Justifying Grid Investments (Planning)

• Cybersecurity

• Resiliency
  o Microgrids
  o Self-healing distribution system (FLISR)
QUESTIONS?