Planning and investing in critical utility infrastructure with public consultation

Pacific Northwest Economic Region
Annual Summit
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CEO
NorthWestern Energy
A “Healthy” utility is built from the bottom-up with a firm foundation in its core-competency.

Supply Adequacy & Stability
- Resource stability and diversity
- Base supply, regulation, efficiency, renewables

Utility Infrastructure Investment
- Programmatic approach to gas and electric transmission and distribution investment, back office systems, technology a partner throughout the business

Ongoing Operations – capital and expense
- Safety, customer service and satisfaction, reliability, security, back office, environmental compliance, regulatory and other compliance

“Evolving Grid Platform”
The Platform Grid — The most critical critical infrastructure*

* According to the Department of Homeland Security, the energy sector is uniquely critical because it provides an “enabling function” across all 16 critical infrastructure sectors.
Innovation Across the Grid

Deployment at the Speed of Value
NWE Montana Distribution System Infrastructure Plan (DSIP)

Approximately $348 million ($133 million already spent through 2014) of capital investment into the multiyear project through 2019. In addition to base investment.
As an investor-owned, state and federally regulated, public utility, NorthWestern Energy has numerous stakeholders and lots of accountability.

**Our Challenge:**
Being the center of our stakeholder group without being the target.

**Stakeholder:** A person, group, or organization that has direct or indirect stake in an organization because it can affect or be affected by the organization's actions, objectives, and policies.
NWE predicted reliability pre DSIP
Managing investment to control price

- Prohibitively Expensive
- Replacement Costs
- Maintenance and Reliability Costs
- Desired Economic Operating Range
- Unacceptable Operations
- Replace only at failure

Frequency of asset replacement

- Very frequent replacement
A range of potential outcomes was initially defined:

**“Slow Decline”**
- Less Investment
  - Further aging
  - Cost of catch-up becomes too high
  - Spiral with recovery nearly impossible

**“Stay the Course”**
- Same Investment
  - Investment now above depreciation
  - Some continued aging
  - Higher maintenance costs
  - Declining reliability
  - Cost of catch-up grows

**“More Aggressive Asset Management”**
- Modest New Investment
  - Arrest the aging
  - New Generation of Asset Management
  - Higher Quality of Information
  - More Proactive Less Reactive Investment and Maintenance costs
  - Maintain reliability

**“Ready for the Future”**
- Significant New Investment
  - Reverse the trend in aging
  - Optimize maintenance costs
  - Improve reliability
  - Position for Smart Grid

**“Brave New Grid”**
- Smart Grid Near-term widespread Smart Grid deployment

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“No barriers to future deployment”
“No regrets about deployment”
The Foundation for the Electric Plan

- **Objectives**
  - Arrest or reverse the trend in aging infrastructure
  - Restore margin (capacity) back into the system
  - Maintain reliability over time, and increase it for our rural customers
  - Position NWE to adopt new technologies

- **Vision - A distribution system that is:**
  - Continuing as safe for our employees and the public
  - Reliable – consistent with the needs of a society that is increasingly dependent on electricity
  - Able to grow - to accommodate the needs of new customers and potential quantum growth from new electric applications
  - Optimized – an optimum mix of investment in new plant and maintenance of existing facilities
  - Responsive to all customers – minimizes the service gap between urban and rural customers
  - Energy efficient – a system that provides the platform to achieve the efficient use of energy resources
  - Cost effective – a system designed, built and operated for least cost while achieving the above objectives
  - State-of-the-art – a system that employs effective technologies to further the above objectives
The Foundation for the Gas Plan

- **Objectives / Attributes**
  - Improve leak rate performance
  - Enthusiastically embrace the industry’s new safety model (DIMP)
  - Employ state-of-the-art analytical skills to proactively manage safety

- **Vision - A distribution system that is:**
  - Continuing as safe for the public and our employees
  - Reliable – maintain our record of near-perfect delivery performance
  - Able to grow to accommodate the needs of new customers
  - Optimized – an optimum mix of investment and maintenance of existing facilities
  - Energy efficient – a system that facilitates the efficient use of energy resources
  - Cost effective – a system designed, built and operated to meet or exceed defined safety levels at optimal cost
  - Modernized – a system that is replaced, over time, to address the cumulative effects of aging infrastructure, older materials, and outdated technologies
## DSIP Progress 2011-2015 Q1

<table>
<thead>
<tr>
<th>Expense Projects- $42M</th>
<th>DSIP</th>
<th>Base</th>
<th>Project To Date (PTD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Trimming</td>
<td>$13,596,260.00</td>
<td>$10,566,438.00</td>
<td>8,643 OH miles</td>
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<tr>
<td>Pole Inspection</td>
<td>$5,597,931.00</td>
<td>$2,219,236.00</td>
<td>8,541 OH miles</td>
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<tr>
<td>OH Electric Repairs (P2’s)</td>
<td>$2,623,084.00</td>
<td>N/A</td>
<td>5,772 repairs</td>
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<tr>
<td>Rural Reliability Improvement</td>
<td>$1,122,260.00</td>
<td>N/A</td>
<td>8 Circuits</td>
</tr>
<tr>
<td>Substation Upgrades</td>
<td>$789,508.00</td>
<td>N/A</td>
<td>*51 Substations</td>
</tr>
<tr>
<td>Automation</td>
<td>$530,866.00</td>
<td>N/A</td>
<td>*28 Base Stations, 8 Subs</td>
</tr>
<tr>
<td>Farm Taps</td>
<td>$17,539.00</td>
<td>N/A</td>
<td>*15 Farm Taps</td>
</tr>
<tr>
<td>Gas Repairs (G1’s)</td>
<td>$756,204.00</td>
<td>N/A</td>
<td>7,254 repairs</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Capital Projects- $144M</th>
<th>DSIP</th>
<th>Base</th>
<th>Project To Date (PTD)</th>
</tr>
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<tbody>
<tr>
<td>Pole Replacement</td>
<td>$56,396,772.00</td>
<td>$11,495,784.95</td>
<td>21,299 poles</td>
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<tr>
<td>Underground Cable Replacement</td>
<td>$28,260,229.00</td>
<td>$7,986,501.34</td>
<td>787,000 trench ft.</td>
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<tr>
<td>Substation Upgrades</td>
<td>$12,151,861.00</td>
<td>N/A</td>
<td>*51 Substations</td>
</tr>
<tr>
<td>Capacity Upgrades</td>
<td>$10,310,909.00</td>
<td>N/A</td>
<td>19 projects</td>
</tr>
<tr>
<td>Gas Historic Block Refurbishment</td>
<td>$23,120,000.00</td>
<td>N/A</td>
<td>160 blocks</td>
</tr>
<tr>
<td>Rural Reliability Improvement</td>
<td>$2,076,454.00</td>
<td>N/A</td>
<td>8 Circuits</td>
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<tr>
<td>Automation</td>
<td>$4,644,622.00</td>
<td>N/A</td>
<td>*28 Base Stations, 8 Subs</td>
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<tr>
<td>Farm Taps</td>
<td>$329,361.00</td>
<td>N/A</td>
<td>*15 Farm Taps</td>
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</tbody>
</table>

*Combination of Capital and Expense*
NorthWestern’s Montana customers have experienced relatively stable, even declining, rates while we continue to invest in the system to meet customer demands and environmental/other regulations.

**Montana Rate Base ($ millions)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rate Base - Nat. Gas</th>
<th>Rate Base - Electric</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>890.8</td>
<td>248.3</td>
</tr>
<tr>
<td>2009</td>
<td>1,246.8</td>
<td>297.0</td>
</tr>
<tr>
<td>2010</td>
<td>1,287.7</td>
<td>362.9</td>
</tr>
<tr>
<td>2011</td>
<td>1,519.6</td>
<td>436.6</td>
</tr>
<tr>
<td>2012</td>
<td>1,553.6</td>
<td>482.0</td>
</tr>
<tr>
<td>2013</td>
<td>1,657.6</td>
<td>538.2</td>
</tr>
<tr>
<td>2014</td>
<td>1,863.1</td>
<td>642.6</td>
</tr>
</tbody>
</table>

Source: Montana Annual Report Schedule 27

* MT Annual Report Schedule 27 is 13 month average rate base. Does not show full impact of hydro assets

**Rate Base CAGR**
- MT Electric 13.1%
- MT Nat. Gas 10.0%

**Typical Bill CAGR**
- MT Electric 0.8%
- MT Nat. Gas -5.2%

Rates based on residential monthly bills – 750 kW for Electric and 10 Dkt for Natural Gas
Transmission & Distribution end-to-end infrastructure initiative
Major categories used in monitoring system capabilities

- Asset Life (managed by components)
- Reliability (by segment and asset performance)
- Capacity (by segment and asset performance)
- Compliance (by segment and asset performance)
- Automation and Technology (used throughout the major categories)
System planning from the “inside”

**Electric**
- **Capacity**
  - Distribution, Substations, Transmission
- **Reliability**
  - Distribution, Substations, Transmission
- **Asset Life**
  - Distribution, Substations, Transmission
- **Compliance**
  - Distribution, Substations, Transmission

**Gas**
- **Capacity**
  - Distribution, Transmission
- **Reliability**
  - Distribution, Transmission
- **Asset Life**
  - Distribution, Transmission
- **Safety/Compliance**
  - Distribution, Transmission

**Overall Infrastructure**

**Distribution Base** – includes Reactive and Normal Maintenance

**Transmission Base** – includes Reactive and Normal Maintenance

**Automation & Technology**
Integrated T&D investment and maintenance plans which directly support long-term goals for managing our delivery systems, and meeting customer expectations.

- Delivery systems serve our customers in urban, suburban and rural areas and are comprised of:
  - Electric & Gas Transmission
  - Substations/Gate/Compressor Stations
  - Electric & Gas Distribution
- Build on model and success of DSIP and DSIP stakeholder process
- Diverse stakeholder group, including technical skills, customers, and others
What is “acceptable service”?

- Disparate customer expectations
- Diverse levels of engagement – “keep the lights on and leave me alone” to “prosumers”
- “Effortless” transactions
- Values driven?
- Reliability expectations?
- Resiliency?
- Efficiency?
- Levels and focus of investment?
- Future utility models?
- Evolution of smart grid?
Can (and should) policy evolve?
Evolving to meet critical needs
  - Integrating new resources
  - Serving new customers
  - Optimizing the grid
  - “Grid of things”

Electric providers are “plug-and-play” for an efficient platform
  - Engagement with technology to deploy standards-based approaches
  - Engagement with policymakers and regulators to define new business models

Multi-year integrated grid vision is critical for resource optimization
  - Allow scalability, flexibility and responsiveness

All to engage with customers to help identify and meet their needs
Planning and investing in long-term infrastructure

How to ensure our ability to attract capital (debt and equity at good prices) to continue investing in essential infrastructure while meeting and complying with other policy goals?
Meeting Complex Customer Expectations

Technology
(what can be done)

Policy
(what may and must be done)

Finance
(what will investors support)

Reliability
Optimization
Adaptability
Power Grid
Dependability
Scalability
Resiliency
Creativity
Visibility
Sustainability
Safety
Environmental Compatibility

CONSISTENCY
Cyber Security
EnHANCED
Redundancy
INTEGRATED
Automated
Interoperability
Two-way Communication
ModerNized
Efficiency

NorthWestern Energy
Delivering a Bright Future
Hierarchy of (Utility) Needs
(Apologies to Abraham Maslow)

- Basic needs plus
  - Super-clean
  - Highly reliable and resilient
  - Independence
  - Participation
- Supply portfolio
  - Long-term
  - Least-cost
  - Least-risk
  - Accounting for externalities

Changing customer goals as basic needs are met

“Prosumers”
Policy Archetypes

**Backwards Looking**
- Historic test year
- Adversarial/contested case
- Accounting based
- Least-cost emphasis

**Forward Looking**
- Future test year
- Collaborative/ADR
- Business-case and planning based
- Achieve multiple outcomes for customers and policy

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**What’s The Best Balance?**
- Bridging mechanisms
- Infrastructure support mechanisms
- Consultation
- Move away from throughput-based revenue
State legislation to support infrastructure

- Over 30 states have infrastructure cost recovery legislation (AGA 2013)
- Indiana SB560 “TDSIC Rider” (transition, distribution and storage improvement charge) allows infrastructure investments by electric and gas utilities in:
  - Safety
  - Replacement
  - Reliability
  - System modernization
  - Economic development
  - General rate case required within seven years of filing date
• What are your goals for utility infrastructure and service?

• What works well now?

• What are the barriers?

• How might we address the barriers?
Delivering a bright future