NON-WIRES SOLUTIONS: CONTEXT, RATIONALE, OPPORTUNITY

Jason Prince | Rocky Mountain Institute
Oregon PUC, Distribution System Planning Workshop
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About Rocky Mountain Institute

• Nonprofit, nonpartisan, independent, research & collaboration firm
• Founded 1982
• Global scope
• ~200 staff
• Focus: Market-based approaches to clean energy
## Summary of key messages

**We need to change the way we plan for a changing grid**

- Distribution planning has traditionally been opaque, but in the context of increasing DERs, grid mod and T&D capex, more transparency is needed.
- Nearly 20 states are pursuing elements of advanced distribution planning to support cost-effective distribution operations and enable DER integration.

**Including Non-Wires Solutions (NWS) in distribution planning is a win-win-win**

- NWS—applications of DERs that defer/avoid costlier “wires-and-panes” investments—provide cost savings, grid and planning flexibility, local economic development and job creation.
- Utilities, customers and the grid can all win by pursuing NWS.

**Removing market barriers is necessary to scale NWS markets**

- Despite the potential for benefits, NWS markets remain nascent.
- RMI’s “NWS Implementation Playbook” offers recommendations for how to overcome regulatory, utility, and procurement barriers.
Context for increased distribution planning transparency
The grid is aging, and business-as-usual reinvestment would require >$1 trillion in capital expenditure through 2030

Estimated United States grid investment requirements, 2018-2030

<table>
<thead>
<tr>
<th>Category</th>
<th>$billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generation</td>
<td></td>
</tr>
<tr>
<td>Transmission</td>
<td></td>
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<tr>
<td>Distribution</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
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</tbody>
</table>

Source: RMI analysis of EIA, FERC, ASCE, and other data
Utilities aren’t wasting any time getting started on distribution system investment, despite the fact that load remains flat

Annual electric distribution system costs for major US utilities, 1997-2017

billions of 2017$

Source: EIA

Annual real CapEx doubled from 1996-2017
Planning processes are evolving to address uncertainty and risks in a changing electric ecosystem

A range of factors are driving states nationwide to focus on distribution planning

Drivers for improved distribution planning

- DER deployment trends
- Grid modernization and grid flexibility needs
- Resilience and reliability
- Enabling NWS that provide net benefits
- Increasing PUC and stakeholder engagement

Survey is from a 2017 report, many more states are following suit on advanced planning practices

<table>
<thead>
<tr>
<th>States with advanced planning practices</th>
<th>Other state approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>✓</td>
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</tbody>
</table>

Source: PNNL/LBNL, PUC Distribution Planning Practices, March 2019
Non-wires solutions as a win-win-win-win
By enabling DERs to provide distribution grid services, NWS offer benefits to utilities, customers, the grid, and the public

If utilities are incentivized to pursue NWS, there can be knock-on benefits for all stakeholders

<table>
<thead>
<tr>
<th>Utilities</th>
<th>Ratepayers</th>
<th>Grid</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Earn a return on NWS investments</td>
<td>• Cost savings</td>
<td>• Operational flexibility (integration of utility-scale wind and solar)</td>
<td>• Environmental benefits (CO₂ reductions)</td>
</tr>
<tr>
<td>• Increase planning flexibility with modular solutions</td>
<td>• Monetizing their DERs</td>
<td>• Resilience</td>
<td>• Local economic development and job creation</td>
</tr>
<tr>
<td>• Test new business models and improve customer satisfaction</td>
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There is growing momentum for NWS

It is no longer just a discussion of New York’s BQDM project, a host of additional case studies exist.
How to remove market barriers to scale NWS markets
RMI’s *Non-Wires Solutions Playbook* outlines three key categories of barriers and relevant potential solutions to scale the NWS opportunity.

**SECTION 1: BEST PRACTICES**

1. Establish a supportive regulatory environment
2. Integrate NWS within standard utility operating procedures
3. Employ a holistic process for NWS procurement

**SECTION 2: IMPLEMENTATION GUIDELINES**

1. Screening Criteria
2. Solicitation Processes
3. Proposal Evaluation
4. Contracting Considerations
1) The regulatory framework needs to create room for NWS

1. Legislature
   - Articulate state NWS vision

2. Incentives
   - Ensure utility interest in NWS

3. Screening and Evaluation Criteria
   - Identify and assess NWS opportunities

4. Data Transparency
   - Enable effective market engagement

5. DER Forecasting
   - Incorporate DERs in planning

6. Stakeholder Processes
   - Ongoing learning

- Rate of return
- Share of Savings
- CapEx vs OpEx
- Platform services
2) Utility processes and structures need to align with NWS

1. Consolidate accountability for NWS and traditional solutions
   - Interdisciplinary teams considering all solution options

2. Allow for both utility- and provider-led integration
   - Both utilities and third-parties can assemble DER portfolio solutions

3. Create structure for scaling pilots to full deployment
   - Collective learning process in quickly evolving landscape
3) Procurement practices need to evolve with the market

**Sourcing Options**

Three inter-related sourcing mechanisms:

1. Pricing
2. Customer Programs
3. Competitive Solicitations

**Best Practices for Competitive Solicitations**

<table>
<thead>
<tr>
<th>Process Enhancements</th>
<th>Technical Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Active stakeholder engagement before, during, and after an RFP</td>
<td>• Provide data-rich needs descriptions</td>
</tr>
<tr>
<td>• Consider the role of third parties in structuring solicitations</td>
<td>• Elaborate solution performance attributes, not technologies</td>
</tr>
<tr>
<td></td>
<td>• Provide clear evaluation criteria</td>
</tr>
<tr>
<td></td>
<td>• Allow for DER interactions with wholesale markets</td>
</tr>
<tr>
<td></td>
<td>• Include pro forma contracts</td>
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</table>
Thank you

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RMI’s Non-Wires Solution Implementation Playbook is available at www.rmi.org