Smart Grid Workforce Training and Education

Gregg Borachok, Duke Energy
Electricity Symposium, Purdue University
August 28, 2013
- Electric Retail Customers – 7.2 million
- Gas Customers – 500,000
- Market Cap – $45 billion
- Employees – 27,775
- Service Territory – 104,000 square miles
- Total US Generation Capacity – 57,700 MWs
- Transmission Lines – 32,200 miles
- Distribution Lines – 289,900 miles
- Duke Energy International owns, operates or has interest in approximately 4,900 MWs of generation
Grid Modernization Activity Across Duke Energy’s Footprint

INDIANA
- Customer Enablement Programs
- Senate Bill 560 opens opportunity for future Grid Mod investments

KENTUCKY
- Customer Enablement Programs
- Evaluating future opportunities
- Kentucky Collaborative Formed

FLORIDA
- Advanced Metering Infrastructure
- Automatic Meter Reading
- Customer Enablement Programs
- Distribution System Demand Response
- Residential Demand Response

CAROLINAS WEST
- Advanced Metering Infrastructure
- Automatic Meter Reading
- Customer Enablement Programs
- Distribution Automation
- Distribution Management System

CAROLINAS EAST
- Advanced Metering Infrastructure
- Automatic Meter Reading
- Customer Enablement Programs
- Condition Based Monitoring
- Distribution System Demand Response

OHIO
- Advanced Metering Infrastructure
- Customer Enablement Programs
- Distribution Automation
- Distribution Management System

ENTERPRISE
- Meter Data Management
Grid Modernization

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<th>Strategy, Planning &amp; Regulatory Support</th>
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<th>Technology Solution Support</th>
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<th>Project Execution</th>
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<tr>
<td>Responsible for overall Grid Modernization strategic plan &amp; roadmap</td>
<td>Leads Grid Modernization proof of concepts for new technology</td>
<td>Accountable for all Beyond the Meter and customer enablement related technology, including proof of concepts and pre-scaled deployment efforts for retail customer segments</td>
<td>Leads development of technical requirements &amp; deliverables to support project development and deployment</td>
<td>Ensures the delivery of the system support resources required for project implementation, including transition operations</td>
<td>Manages Grid Modernization program elements</td>
<td>Provides consistent project management leadership direction to successfully execute projects on time, schedule and budget</td>
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<td>Works w/ business partners to develop strategy, including regular coordination with transmission and delivery operations</td>
<td>Develops hypotheses, scope and funding for pre-scaled deployments and integration of technology pertaining to telecommunications and meter related technologies</td>
<td>Responsible for data and data analytics strategy, planning, and roadmap</td>
<td>Partners with Stds and Asset Mgmt organizations to create or modify standards related to GM projects</td>
<td>Provides input on strategic product partner relationships related to GM tech</td>
<td>Responsible for program controls and integrated program planning and reporting</td>
<td>Provides resource planning and management for Grid Modernization</td>
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<td>Manages regulatory strategy related to Grid Modernization efforts; interfaces to internal regulatory and corporate planning partners</td>
<td>Leads IT/OT external standards setting and coordination</td>
<td>Leads deployment initiatives such as the Residential Demand Response (RDR) project and HES-Ohio</td>
<td>Creates and maintains technical information related to GM projects</td>
<td>Verifies that Project Execution is delivering against defined architecture</td>
<td>Manages QA / QC and vendors</td>
<td>Provides Change Management and Business Process Management governance</td>
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<td>Develops &amp; coordinates GM communications and industry outreach efforts</td>
<td>Owns Grid Modernization design basis documentation</td>
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<td>Performs engineering &amp; technical analysis</td>
<td>Develops IT system applications roadmap</td>
<td>Manages Change Management and Risk Mgmt</td>
<td>Prepares business for turnover of project assets to business</td>
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Beyond the Meter(BTM) and Customer Enablement

- Leads Grid Modernization proof of concepts for new technology
- Develops hypotheses, scope and funding for pre-scaled deployments and integration of technology pertaining to telecommunications and meter related technologies
- Owns Grid Modernization design basis documentation

Engineering

- Leads development of technical requirements & deliverables to support project development and deployment
- Partners with Stds and Asset Mgmt organizations to create or modify standards related to GM projects
- Responsible for data and data analytics strategy, planning, and roadmap
- Leads deployment initiatives such as the Residential Demand Response (RDR) project and HES-Ohio

Technology Solution Support

- Ensures the delivery of the system support resources required for project implementation, including transition operations
- Provides input on strategic product partner relationships related to GM tech
- Creates and maintains technical information related to GM projects
- Performs engineering & technical analysis
- Provides Subject Matter Expert (SME) support

Governance and Program Management

- Manages Grid Modernization program elements
- Responsible for program controls and integrated program planning and reporting
- Manages QA / QC and vendors
- Manages Change Management and Business Process Management governance
- Verifies that Project Execution is delivering against defined architecture
- Develops IT system applications roadmap

Project Execution

- Provides consistent project management leadership direction to successfully execute projects on time, schedule and budget
- Provides resource planning and management for Grid Modernization
- Manages Change Management and Risk Mgmt
- Prepares business for turnover of project assets to business
Grid Modernization: Workforce Strategy

Strategy evolves as we look at moving from a model that was focused on individual projects to a program that is effectively transforming the business.

Common Traditional Roles
- Project Management
- Business Process Management
- Change Management
- Engineering
- Finance
- Analysts

Emerging/Future Needs
- Data Scientists
- Technology Leads
- Strategy, Public Policy & Regulatory to influence regulatory changes to support industry evolution
- Increased Focus on Program Management to Effectively Realize Long-term Program Benefits/Value
  - Business Process
  - Change Management
  - Communications
  - Risk Management
University Partnerships Key to Research & Talent Pipeline

- R&D critical input to understand future capabilities of emerging technology for utility, while exposing students to needs in industry
- Utility must more effectively communicate evolution of industry and emerging needs with universities on consistent basis in order to effectively prepare for change
Duke Energy – Purdue University Partnership

- Attracting and retaining talent is a strategic priority for Duke Energy – especially in a changing energy landscape.

- Duke Energy is a proud partner of Purdue University, and this year will participate in several Purdue University events, including the Nuclear Engineering Opportunity Night (NEON) and Industrial Roundtable in September.

- Duke Energy provides students with opportunities, starting as interns and co-ops, as well as full time hires.

- Because Purdue provides talent for key skills and hiring such as Engineering, Supply Chain, and IT/Computer Science, Duke Energy supports the university through the Duke Energy Foundation for programs that strengthen workforce development.