

Smart Grid Maturity Model

Compass Assessment Survey

A survey-based assessment of smart grid maturity

Version 1.1

September 2010

<http://www.sei.cmu.edu/smartgrid>



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The Smart Grid Maturity Model (SGMM) is being maintained and improved under the support of the U.S. Department of Energy under Federal Government Contract Number FA8721-05-C-0003 with Carnegie Mellon University for the operation of the Software Engineering Institute, a federally funded research and development center sponsored by the U.S. Department of Defense. The Government of the United States has a royalty-free government-purpose license to use, duplicate, or disclose the work, in whole or in part and in any manner, and to have or permit others to do so, for government purposes pursuant to the copyright license under the clause at 252.227-7013

<http://www.sei.cmu.edu/smartgrid>

About this document

This document presents the Smart Grid Maturity Model (SGMM) Compass—a survey-based assessment of smart grid maturity that is part of the SGMM product suite. The SGMM is fully defined in the *SGMM Model Definition* (<http://www.sei.cmu.edu/smartgrid/start/downloads/>), which provides valuable and important context for interpreting the questions provided in this document.

The Compass survey is intended for completion by or on behalf of utilities. Compass questions are designed to collect demographic and performance data and to characterize the status of the responding utility's smart grid implementation in the context of the SGMM. Completing the Compass survey and having it scored provides the utility with a maturity level rating for each domain in the model. In addition, each scoring report includes aggregate data from the other utilities that have completed the Compass survey, which can be used for comparative analysis.

Specifically, the Compass survey is comprised of 12 sections

- **Sections 1 and 2** capture contact information for the responding utility and the person completing the survey. The contact information in Section 2 will be the point of contact during Compass scoring and reporting.
- **Section 3** collects key demographic data about the responding organization. This information will be used to normalize Compass data and to help generate meaningful comparative data for Compass users.
- **Section 4** collects grid performance data that is used to correlate the impact of increasing smart grid maturity with overall grid performance.
- **Sections 5-12** present multiple choice questions organized by SGMM domain that address each expected characteristic in the model. Since these questions correspond directly to the expected characteristics defined in the model, the *SGMM Model Definition* is a helpful resource for interpreting these questions.

Compass scoring is provided by the Software Engineering Institute (SEI) in collaboration with APQC. The SEI will use aggregated data collected from the Compass survey to support smart grid knowledge dissemination, to provide community views that are included in each Compass scoring report, to report on the status of smart grid maturity, and to further improve the SGMM product suite. An organization that completes the Compass survey will be listed as having participated in the SGMM and the organization's data will be included in the SGMM aggregate data; however, an organization's specific data will not be released by the SEI or APQC without that organization's permission.

For additional information about completing the Compass survey and having it scored, visit www.sei.cmu.edu/smartgrid or contact SEI Customer Relations at 412-268-5800 or customer-relations@sei.cmu.edu.

1 Company Information – for the Organization Being Assessed

Company Name (include division if applicable)

Address Line 1

Address Line 2

City

State or Province

Postal Code

Country

Web Site

2 Contact Information - Person Responsible for Completing the Compass

First Name

Last Name

Title

Address Line 1

Address Line 2

City

State or Province

Postal Code

Country

Phone

Email

Functional Area

Please identify your role in the data collection

- a. Navigator
- b. Third Party (include company name)
- c. Internal

3 Demographic Information

1. Organization name
 - a. Is the organization being assessed a subset of the overall organization?
 - b. If you answered yes above, please include the name of the overall organization.

For the remainder of this compass, please provide data for the assessed organization.

2. Please specify what unit of currency you are reporting in this compass (default is US Dollars).
3. Please specify what measurement system you are reporting in this compass (default is US measurement system).
4. Please provide the end date of the 12-month period for which you will be providing data in this compass (e.g., Dec 31, 2007).
5. Number of employees (include temporary, part-time, and full-time)
6. Total customer count
 - a. Residential
 - b. Commercial and industrial
 - c. Total customers
7. Meter count
 - a. Advanced
 - b. Total

8. Megawatts
 - a. Megawatt hours of generation served
 - b. Peak demand (Megawatt)
 - c. Level of distributed generation (Megawatt hours)
9. Number of line miles
10. Size of service territory in square miles
11. Annual # of field visits (e.g., truck rolls)
12. Number of substations by voltage class
 - a. Less than 13kV
 - b. Between 13kV and 35kV
 - c. Between 35kV and 69kV
 - d. Between 69kV and 115kV
 - e. Between 115kV and 230kV
 - f. Between 230kV and 345kV
 - g. Between 345kV and 765kV
 - h. Between 765kV and 1100kV
 - i. More than 1100kV
 - j. Total number of substations

13. In which industry segments does your organization participate?
(Please select all that apply)

- a. Generation
- b. Transmission
- c. Distribution
- d. Retail
- e. Other

14. Total revenue (Please answer all that apply)

- a. Generation
- b. Transmission
- c. Distribution
- d. Retail
- e. Other

4 Performance Information

1. Please provide the following information regarding system performance for the prior year.¹
 - a. Predicted SAIFI
 - b. Actual SAIFI
 - c. Predicted SAIDI
 - d. Actual SAIDI
2. What is the organization's average duration of outage (in minutes)?
3. What is the organization's average % of customers impacted by the typical outage?
4. What is the organization's total number of outages during the most recent fiscal year?
5. Please provide the following information regarding the organization's total number of planned outages during the most recent fiscal year.
 - a. Cumulative duration of planned outages during the most recent fiscal year (in minutes)?
 - b. Average duration of planned outages during the most recent fiscal year (in minutes)?
6. What is the organization's total number of unplanned outages?
7. What is the organization's total line loss % (percentage of total line loss across the grid based on source energy)?

¹ Please calculate using IEEE Std 1366-2003.

8. Please provide the organization's operating costs. This includes personnel, systems, overhead, outsourcing costs, and other costs.
 - a. Total operating cost for transmission operation
 - b. Total operating cost for distribution operation
9. Please provide the following information regarding field visit operations (truck rolls).
 - a. Total work orders initiated
 - b. Total field visits operations (truck rolls) avoided by smart grid
10. What is your organization's ERT (estimated restoration time) accuracy?
11. What time period does your multi-year smart grid plan cover? (Please select only one.)
 - a. < 3 years
 - b. 3 – 4 years
 - c. 5 – 7 years
 - d. > 7 years
 - e. Not applicable or no plan

5 Strategy, Management, and Regulatory (SMR)

Level 1: Initiating

- SMR-1.1** Has your organization developed a smart grid vision that addresses operational improvement?
- A. No
 - B. Within a single function (or line of business)
 - C. Across multiple functions (encompasses and is communicated across multiple functions)
 - D. Across the organization (encompasses and is communicated across all functions in the organization)
- SMR-1.2** Are experimental implementations of smart grid concepts supported within your organization?
- A. No
 - B. Limited experimentation with limited organizational support
 - C. Significant experimentation with limited organizational support
 - D. Limited experimentation with strong organizational support
 - E. Significant experimentation with strong organizational support
- SMR-1.3** Have you had discussions with regulators about your smart grid vision?
- A. No
 - B. Limited informal discussions have been held
 - C. Extensive discussions have been held

Level 2: Enabling

- SMR-2.1** Has an initial smart grid strategy and business plan been approved by executive management?
- A. No
 - B. In development
 - C. Provisionally approved
 - D. Formally approved
- SMR-2.2** Is a common smart grid vision accepted across your organization?
- A. No
 - B. Within a single function and/or line of business
 - C. Across multiple functions and/or lines of business
 - D. Across all functions and/or lines of business

- SMR-2.3** Are your organization's operational investments aligned to the smart grid strategy and business plan?
- A. No
 - B. Partial, indirect alignment (not driven specifically from smart grid)
 - C. Partial, explicit alignment (driven from smart grid)
 - D. Significant, explicit alignment
- SMR-2.4** Are budgets established specifically for funding the implementation of the smart grid?
- A. No
 - B. Very limited (<30% of estimated need for current funding year)
 - C. Moderate amounts (30% - 70%)
 - D. Extensive (>70%)
- SMR-2.5** Is your organization collaborating with regulators and other stakeholders about your smart grid vision and strategy?
- A. No
 - B. With stakeholders only
 - C. With regulators only
 - D. With both stakeholders and regulators
- SMR-2.6** Is support and funding provided for conducting smart grid proof-of-concept projects (e.g., AMI, DG)?
- A. No
 - B. Limited with informal funding and support
 - C. Significant with informal funding and support
 - D. Limited with formal funding and support
 - E. Significant with formal funding and support

Level 3: Integrating

- SMR-3.1** Has your smart grid vision, strategy, and business case been incorporated into your organization's vision and strategy?
- A. No
 - B. Somewhat
 - C. Extensively
 - D. Completely
- SMR-3.2** Have you established a smart grid governance model for smart grid management and decision-making roles, processes, and tools?
- A. No
 - B. Partial
 - C. Yes, a standalone model
 - D. Yes, integrated into existing governance model

SMR-3.3 Do you have one or more smart grid leaders with explicit authority across functions and lines of business to ensure proper implementation of smart grid strategy?

- A. No
- B. Multiple leaders, but lacking clear alignment or boundaries
- C. Multiple leaders, aligned
- D. Single leader

SMR-3.4 Have required authorizations for smart grid investments been secured from stakeholders (e.g., regulators, stockholders, tax payers)?

- A. No
- B. Indirectly
- C. Partially
- D. Explicitly and completely

Level 4: Optimizing

SMR-4.1 Does your smart grid vision and strategy drive strategy and direction at the highest level (e.g., enterprise or corporate level)?

- A. No
- B. Smart grid has limited or indirect impact
- C. Significant and direct impact
- D. Drives strategy

SMR-4.2 Is smart grid a core competency throughout your organization?

- A. No
- B. Across parts of the organization
- C. Across the entire organization
- D. Across the entire organization and drives future competency

SMR-4.3 Is your smart grid strategy communicated and revised collaboratively with external stakeholders, excluding some sensitive aspects?

- A. No
- B. Some stakeholders
- C. All key stakeholders
- D. All stakeholders

Level 5: Pioneering

- SMR-5.1** Does your organization capitalize on smart grid as a foundation for the introduction of new services and product offerings?
- A. No
 - B. Little
 - C. Moderately
 - D. Extensively
- SMR-5.2** Do your smart grid business activities provide sufficient financial resources to enable continued investment in smart grid sustainment and expansion?
- A. No
 - B. Partially
 - C. Yes, primarily through cost savings and efficiency gains
 - D. Yes, primarily through new products and services
 - E. Yes, primarily through optimized rate recovery
 - F. Yes, through a combination of the above
- SMR-5.3** Have you implemented new business models as a result of smart grid capabilities?
- A. No
 - B. Identified, but not yet implemented
 - C. At least one new business model implemented
 - D. Multiple implemented

6 Organizational Structure (OS)

Level 1: Initiating

- OS-1.1** Has your organization articulated (communicated) its need to build smart grid competencies in its workforce?
- A. No
 - B. Partially (communication has occurred in some parts of the organization)
 - C. Extensively (communication has occurred throughout the organization)
- OS-1.2** Has your leadership demonstrated a commitment to change the organization in support of achieving smart grid?
- A. No
 - B. Leadership has made public statements regarding their commitment for change
 - C. Leadership has taken actions, such as assigning resources and budget
- OS-1.3** Have awareness efforts within the workforce been initiated to support your smart grid activities?
- A. No
 - B. Within a single function and/or line of business
 - C. Across multiple functions and/or lines of business
 - D. Across all functions and/or lines of business

Level 2: Enabling

- OS-2.1** Has your smart grid vision begun to drive change and affect related priorities (e.g., addressing the need for an adequately skilled workforce)?
- A. No
 - B. Within a single function and/or line of business
 - C. Across multiple functions and/or lines of business
 - D. Across all functions and/or lines of business
- OS-2.2** Has your organization aligned operations around end-to-end processes to leverage smart grid capabilities?
- A. No
 - B. A little (a few end-to-end processes are aligned to leverage smart grid capabilities)
 - C. Moderately (several)
 - D. To a great extent (most or all)
- OS-2.3** Do smart grid implementation and deployment teams include participants from all impacted functions and lines of business?
- A. No
 - B. Partially (<50% of impacted groups)
 - C. Substantially (50%-80%)
 - D. To a great extent (>80%)

- OS-2.4** Have education and training activities to develop smart grid competencies been identified and made available?
- A. No
 - B. In development
 - C. In place for at least one function and/or line of business
 - D. In place across multiple functions and/or lines of business
- OS-2.5** Have you linked performance and compensation plans to the achievement of smart grid strategy milestones?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Yes

Level 3: Integrating

- OS-3.1** Is your smart grid vision and strategy driving organizational change (e.g., roles, interactions, compensation, hiring criteria)?
- A. No
 - B. Indirectly
 - C. In one function and/or line of business
 - D. Across two or more functions and/or lines of business
 - E. Across all functions and/or lines of business
- OS-3.2** Does your organization's measurement system incorporate smart grid measures (e.g., on balanced scorecard)?
- A. No
 - B. Indirectly
 - C. In one function and/or line of business
 - D. Across two or more functions and/or lines of business
 - E. Across all functions and/or lines of business
- OS-3.3** Are performance evaluation and/or compensation linked to smart grid success (i.e., tangible benefits resulting from smart grid deployment or application)?
- A. No
 - B. For a few selected people
 - C. For all smart grid leaders
 - D. For all leaders
 - E. For all smart grid workers (leaders and staff)
- OS-3.4** Does your leadership provide a consistent smart grid vision and strategy in both actions and communications?
- A. No
 - B. To some extent (< 40% of your leaders, including managers)
 - C. Moderately (40% - 80%)
 - D. To a great extent (> 80%)

- OS-3.5** Does your organization have a matrix or overlay structure to support smart grid activities?
- A. No
 - B. Evaluation is under way
 - C. Evaluation is complete and no changes were needed to adapt to new smart grid capabilities
 - D. Evaluation is complete and changes are documented in a plan for implementation
 - E. Evaluation is complete and changes have been implemented
- OS-3.6** Are your education and training programs aligned to exploit smart grid capabilities?
- A. No
 - B. In at least one function and/or line of business
 - C. Across two or more functions and/or lines of business
 - D. Across all functions and/or lines of business

Level 4: Optimizing

- OS-4.1** Are management systems and organizational structures capable of taking widespread advantage of the increased visibility and control capabilities provided through smart grid?
- A. No
 - B. Limited
 - C. Largely
 - D. Yes
- OS-4.2** Does your organization have end-to-end grid observability that can be leveraged by both internal and external stakeholders?
- A. No
 - B. Limited (<60% of stakeholders)
 - C. Largely (60% - 90%)
 - D. Yes (>90%)
- OS-4.3** Is decision making occurring at the closest point of need as a result of an efficient organizational structure and the increased availability of information due to smart grid?
- A. No
 - B. Limited
 - C. Largely
 - D. Yes

Level 5: Pioneering

- OS-5.1** Does your organizational structure enable collaboration with other grid stakeholders to optimize overall grid operation and health?
- A. No
 - B. A little (the organization participates in some community-wide responses to grid health)
 - C. Moderately (the organization participates in most community-wide responses to grid health)
 - D. Yes (the organization is a leader in community-wide responses to grid health)
- OS-5.2** Is your organization and its structure readily adapting to support new ventures, products and services as they emerge as a result of smart grid?
- A. No
 - B. Limited
 - C. Largely
 - D. Yes
- OS-5.3** Are channels established to harvest ideas, develop them, and reward those that help to shape future advances in process, workforce competencies, and technology?
- A. No
 - B. Limited
 - C. Largely
 - D. Yes

7 Grid Operations (GO)

Level 1: Initiating

- GO-1.1** Do you have a business case for new equipment and systems related to smart grid for at least one business function (e.g., AMI, remote disconnect, PMUs, etc.)?
- A. No
 - B. In development
 - C. Approved
 - D. Being executed
- GO-1.2** Are you evaluating new sensors, switches and communications technologies for grid monitoring and control?
- A. No
 - B. To some extent, not directly for smart grid
 - C. To some extent, for smart grid
 - D. To a great extent (i.e., numerous evaluations underway or completed)
- GO-1.3** Do you have proof-of-concept projects and/or component testing for grid monitoring and control underway?
- A. No
 - B. To some extent, not directly for smart grid
 - C. To some extent, for smart grid
 - D. To a great extent (i.e., numerous evaluations underway or completed)
- GO-1.4** Are you evaluating outage and distribution management systems linked to substation automation (beyond SCADA)?
- A. No
 - B. To some extent, not directly for smart grid
 - C. To some extent, for smart grid
 - D. To a great extent (i.e., numerous evaluations underway or completed)
- GO-1.5** Are safety and security (physical and cyber) requirements considered in all grid operation initiatives?
- A. No
 - B. Some (<50%)
 - C. Most (50% - 90%)
 - D. Yes, for essentially all initiatives (>90%)

Level 2: Enabling

- GO-2.1** Have you implemented distribution to substation automation?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Some completed (<70% of substations)
 - E. Most completed (≥70%)

- GO-2.2** Are you implementing advanced outage restoration schemes that automatically resolve (self-heal) or reduce the magnitude of unplanned outages?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Many completed (>20% of grid)
- GO-2.3** Aside from SCADA, are you piloting remote asset monitoring of key grid assets to support manual decision making?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Piloting
 - D. Pilots complete or technology being deployed
- GO-2.4** Are you investing in expanded data communications networks in support of grid operations?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Partially completed (in place and functioning for >20% of grid)
 - E. Largely completed (>80%)

Level 3: Integrating

- GO-3.1** Is smart grid information made available across systems and organizational functions?
- A. No
 - B. In development
 - C. Available across a few functions and systems
 - D. Available across most functions and systems
- GO-3.2** Has implementation of new control analytics improved across line-of-business decision-making?
- A. No
 - B. Within individual lines of business
 - C. Across several lines of business
 - D. Across most or all lines of business
- GO-3.3** Has grid operations planning transitioned from estimation to fact-based using grid data made available from smart grid deployment?
- A. No
 - B. A little (<20% of planning decisions fact-based)
 - C. Moderately (25% - 75%)
 - D. To a great extent (75% - 90%)
 - E. Completely (>90%)
- GO-3.4** Have smart meters become important grid management sensors within your network?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Moderately (<40% percent of grid is using meters as management sensors)
 - D. To a great extent (≥40%)

- GO-3.5** Is grid data being used to support physical and cyber security through situational awareness and diagnostic activities?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Situational awareness and diagnostics deployed for one or more critical functions
 - D. Deployed for all critical functions
 - E. Deployed comprehensively across grid
- GO-3.6** Is there automated decision-making within protection schemes (i.e., leveraging increased analytic capabilities and context)?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Analytics-based decision-support informs human operators
 - D. At least one analytics-based decision type is being automatically executed
 - E. Numerous analytics-based decision types are being automatically executed

Level 4: Optimizing

- GO-4.1** Is operational data from smart grid deployments being used to optimize processes across the organization?
- A. No
 - B. A little (< 50% of impactable processes)
 - C. To a great extent (50% - 80% of impactable processes)
 - D. Completely (> 80% of impactable processes)
- GO-4.2** Is your grid operational management based on near real-time data (dynamic grid management)?
- A. No
 - B. A little (<25% of operational decisions using near real-time data)
 - C. Moderately (25% - 75%)
 - D. To a great extent (76% - 90%)
 - E. Completely (>90%)
- GO-4.3** Are your operational forecasts based upon data gathered through smart grid capabilities?
- A. No
 - B. A little (<25% of operational decisions using near real-time data)
 - C. Moderately (25% - 75%)
 - D. To a great extent (76% - 90%)
 - E. Completely (>90%)
- GO-4.4** Has grid operations information been made available across functions and lines of business (is there end-to-end observability)?
- A. No
 - B. A little (<50% of functions and lines of business have access to grid data)
 - C. To a great extent (50% - 80%)
 - D. Completely (>80%)

- GO-4.5** Is there automated decision-making within protection schemes based on wide area monitoring (beyond your operational boundaries)?
- A. No
 - B. Wide area analytics-based decision-support informs human operators
 - C. At least one wide area analytics-based decision type is being automatically executed
 - D. Numerous wide area analytics-based decision types are being automatically executed

Level 5: Pioneering

- GO-5.1** What percentage of your operational grid employs self-healing operations?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- GO-5.2** Do you have analytics-based and automated decision-making in place system-wide (applying proven analytics-based control)?
- A. No
 - B. A little (across <50% of your systems)
 - C. To a great extent (50% - 80%)
 - D. Completely (>80%)

8 Work and Asset Management (WAM)

Level 1: Initiating

- WAM-1.1** Do you have an approved functional-level business case for work and asset management enhancements via smart grid?
- A. No
 - B. In development
 - C. Approved
 - D. Approved and being executed
- WAM-1.2** Are you evaluating potential uses of remote asset monitoring?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Completed
- WAM-1.3** Are you evaluating or have you evaluated asset and workforce management equipment and systems for potential alignment to the smart grid vision?
- A. No
 - B. Yes, not aligned to smart grid vision
 - C. Yes, aligned to smart grid vision
 - D. Yes, and aligned to smart grid business case

Level 2: Enabling

- WAM-2.1** Have you established an approach to track, inventory, and maintain event histories of assets using smart grid capabilities?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Being piloted
 - E. Completed
- WAM-2.2** Have you developed an integrated view of GIS (Geographical Information Systems) for asset monitoring based upon location, status and interconnectivity (nodal)?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Being piloted
 - E. Completed
- WAM-2.3** Has an organization-wide mobile workforce strategy been developed?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Completed

Level 3: Integrating

- WAM-3.1** What percentage of individual components in your cyber and physical systems has performance, trend analysis, and event audit data available?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- WAM-3.2** For what percentage of key components have you implemented condition-based maintenance?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- WAM-3.3** Have you integrated remote asset monitoring with asset management?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Completed to one or more asset classes
 - E. Completed (> 80% of asset classes)
- WAM-3.4** Have you integrated remote asset monitoring capabilities with mobile workforce systems to automate work order creation?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Completed to one or more asset classes
 - E. Completed (> 80% of asset classes)
- WAM-3.5** Have you implemented an integrated view of GIS and asset monitoring based upon location, status, and interconnectivity?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Completed to one or more asset classes
 - E. Completed (> 80% of asset classes)
- WAM-3.6** What percentage of your asset inventory is tracked using some level of automation from source to utilization (e.g., from supplier to installed location)?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

- WAM-3.7** Are you modeling asset investments for key components based upon smart grid data?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Completed to one or more components
 - E. Completed (> 80% of components)

Level 4: Optimizing

- WAM-4.1** For what percentage of asset classes do you have a complete view (including location, interrelationships) based upon status (including security state), connectivity and proximity?

- A. 0%
- B. 1 – 25%
- C. 26 – 50%
- D. 51- 75%
- E. 76- 100%

- WAM-4.2** What percentage of your asset models are based upon real (both current and historical) performance and monitoring data?

- A. 0%
- B. 1 – 25%
- C. 26 – 50%
- D. 51- 75%
- E. 76- 100%

- WAM-4.3** Are you optimizing the performance and use of assets (from procurement through retirement) in consideration of the entire asset fleet and across asset categories?

- A. No
- B. 1 – 25% (of asset classes are optimized)
- C. 26 – 50%
- D. 51- 75%
- E. 76- 100%

- WAM-4.4** Do you have condition-based and predictive maintenance on key components?

- A. No
- B. 1 – 25% (of key components)
- C. 26 – 50%
- D. 51- 75%
- E. 76- 100%

Level 5: Pioneering

WAM-5.1 Are you optimizing the use of assets between and across supply-chain participants?

- A. No
- B. For very few (<10% of asset classes or partners)
- C. For some (10% - 49%)
- D. For many (50% - 80%)
- E. Yes (>80%)

WAM-5.2 Are your assets leveraged to maximize utilization, including just-in-time asset retirement, based on smart grid data and systems?

- A. No
- B. For very few (<10% of assets)
- C. For some (10% - 49%)
- D. For many (50% - 80%)
- E. Yes (>80%)

9 Technology (TECH)

Level 1: Initiating

- TECH-1.1** Do you have an enterprise IT architecture?
- A. No
 - B. Evaluating benefits of candidate enterprise IT architectures
 - C. Enterprise IT architecture is under development
 - D. Yes
- TECH-1.2** Have you evaluated your existing or proposed enterprise IT architecture for the quality attributes that would support smart grid applications?
- A. No
 - B. In planning
 - C. Informal evaluations
 - D. Formal evaluations
- TECH-1.3** Do you have a change control process (e.g., configuration management, patch updates) for applications and IT infrastructure?
- A. No
 - B. Informal process
 - C. Formal process deployed for at least one class of applications or one IT infrastructure element (e.g., servers, routers)
 - D. Formal process deployed for numerous classes and/or elements
 - E. Formal process deployed for all classes and elements
- TECH-1.4** Have you identified where technology can improve the performance of functional departments (e.g., reduce cost, improve workflow, simplify, automate, reduce risk, improve flexibility/adaptability)?
- A. No
 - B. Partial
 - C. Complete
 - D. Previously in place
- TECH-1.5** Do you have a process to evaluate and select technologies in alignment with your smart grid vision and/or strategy?
- A. No
 - B. Indirectly (not specific for smart grid)
 - C. Informal processes used
 - D. Yes, formal process in place for at least one function and/or line of business
 - E. Yes, formal process in place for most or all functions and/or lines of business

Level 2: Enabling

- TECH-2.1** Do you align tactical IT investments to your enterprise IT architecture?
- A. No
 - B. Within a function and/or line of business
 - C. Across multiple functions and/or lines of business
 - D. Across all functions and/or lines of business
- TECH-2.2** Are changes to your enterprise IT architecture to enable smart grid being deployed?
- A. No
 - B. In progress
 - C. Within a function and/or line of business
 - D. Across multiple functions and/or lines of business
 - E. Across all functions and/or lines of business
- TECH-2.3** Have you selected standards that support your smart grid strategy within your enterprise IT architecture?
- A. No
 - B. Being evaluated and or developed
 - C. Key standards selected
 - D. Most or all needed standards have been selected
- TECH-2.4** Does your organization adhere to a common technology evaluation and selection process for all smart grid activities, including vendor and external source selection?
- A. No
 - B. Informal processes used
 - C. Formal process in place for at least one function/line of business
 - D. Formal process in place for most or all functions/lines of business
- TECH-2.5** Do you have a data communications strategy for your grid?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Under development
 - D. Complete and approved
 - E. Being executed
- TECH-2.6** Are pilots underway for business unit applications based on connectivity to intelligent electronic devices (IED) (e.g., remote processors)?
- A. No, IED connectivity not yet in place
 - B. No business unit pilots are planned
 - C. In documented plan including committed schedule and budget
 - D. Pilots underway
 - E. Pilots complete
- TECH-2.7** What percentage of smart grid initiatives have information security considerations built in from the outset?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

Level 3: Integrating

- TECH-3.1** Are smart grid-impacted business processes aligned with your enterprise IT architecture across LOBs?
- A. No
 - B. In development
 - C. A little (<30% of impacted processes)
 - D. To a great extent (30% - 70%)
 - E. Completely (>70%)
- TECH-3.2** What percentage of your systems adhere to your enterprise IT architectural framework for smart grid?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- TECH-3.3** Have you implemented smart grid-specific technology to improve cross-LOB performance (e.g., peak demand management, fault detection, integrated VVO)?
- A. No
 - B. Only as pilots or demonstration projects
 - C. Within one or more functions and/or lines of business
 - D. Integrated across multiple functions and/or lines of business
 - E. Integrated across all functions and/or lines of business
- TECH-3.4** Do you have distributed intelligence and analytical capabilities that are enabled through smart grid technologies?
- A. No
 - B. In development
 - C. Within one or more functions and/or lines of business
 - D. Integrated across multiple functions and/or lines of business
 - E. Integrated across all functions and/or lines of business
- TECH-3.5** Do you have an advanced sensor plan (e.g., for situational awareness, for near real-time control, using phasor measurement units or other sophisticated sensors)?
- A. No
 - B. In development
 - C. Within one or more functions and/or lines of business
 - D. Supports across multiple functions and/or lines of business
 - E. Supports all functions and/or lines of business
- TECH-3.6** Do you have a detailed data communications strategy and corresponding tactics in place?
- A. No
 - B. In development
 - C. Within functions and/or lines of business
 - D. Across multiple functions and/or lines of business
 - E. Across all functions and/or lines of business

Level 4: Optimizing

- TECH-4.1** Do you have end-to-end data flow from customer to generation (where permitted by security, privacy, and other requirements)?
- A. No
 - B. In development
 - C. A little (connecting <50% of customers and sources)
 - D. To a great extent (50% - 80%)
 - E. Yes (>80%)
- TECH-4.2** What percentage of your business processes are optimized by leveraging your enterprise IT architecture?
- A. 0%
 - B. 1 - 25% (of impactable processes)
 - C. 26 – 50%
 - D. 51 – 75%
 - E. 76 – 100%
- TECH-4.3** Do your systems have sufficient wide-area situational awareness to enable real-time monitoring/control/mitigation in response to complex events (e.g., natural disasters, severe weather, extreme demand fluctuations, etc.)?
- A. No
 - B. In development
 - C. 1 – 25% (of applicable systems)
 - D. 26 – 50%
 - E. 51 – 75%
 - F. 76 – 100%
- TECH-4.4** Do you use predictive modeling and/or near real-time simulation to optimize support processes (e.g., for maintenance, power management, call center, decision support)?
- A. No
 - B. In development
 - C. 1 – 25% (of applicable systems)
 - D. 26 – 50%
 - E. 51 – 75%
 - F. 76 – 100%
- TECH-4.5** Is your organization's performance being improved by using sophisticated systems that are informed by smart grid data (e.g., business intelligence or knowledge management systems)?
- A. No
 - B. In development
 - C. Somewhat
 - D. To a great extent
- TECH-4.6** Do your security strategy and tactics continually evolve based on changes in the operational environment and lessons learned?
- A. No
 - B. Only in response to changes in standards or regulatory requirements
 - C. Yes, in an ad hoc manner
 - D. Yes, as part of a continuous process

Level 5: Pioneering

TECH-5.1 Have you implemented autonomic computing using machine learning?

- A. No
- B. In development
- C. Limited deployment
- D. Extensive deployment

TECH-5.2 Do your information systems automatically identify, mitigate, and recover from cyber incidents?

- A. No
- B. In development
- C. Limited deployment
- D. Extensive deployment
- E. Complete deployment, the systems automatically inform relevant stakeholders

10 Customer (CUST)

Level 1: Initiating

- CUST-1.1** Are you conducting research on how to use smart grid technologies to enhance your customers' experience, benefits, and participation?
- A. No
 - B. Indirectly (not as part of your smart grid initiatives, but providing smart grid insights)
 - C. Directly as needed
 - D. Continuously as part of your normal process
- CUST-1.2** Are you investigating the security and privacy implications of the new technologies and business functions that enable customer participation in the smart grid?
- A. No
 - B. Indirectly (not as part of your smart grid initiatives, but providing smart grid insights)
 - C. Directly as needed
 - D. Continuously as part of your normal process
- CUST-1.3** Are you communicating and explaining your vision of the future grid to your customers (e.g., by explaining smart grid benefits and describing potential use case scenarios)?
- A. No
 - B. Informal, no structured communications
 - C. Indirect through media or other channels
 - D. Direct to customers
- CUST-1.4** Are you consulting with public utility commissions and/or other government organizations regarding the impact on customers of your smart grid strategies and anticipated implementation schedule?
- A. No
 - B. On a limited basis (collaboration is infrequent and not part of normal business processes)
 - C. Extensively (collaborations are frequent and are a part of normal business processes)

Level 2: Enabling

- CUST-2.1** Have you piloted Advanced Metering Infrastructure (AMI) and /or Automated Meter Reading (AMR) to residential customers?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Piloting
 - D. Deployed
- CUST-2.2** Do you collect residential customer usage data more frequently than monthly for use in operational analytics and planning?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Partially deployed to customers (<40%)
 - E. To a great extent (>=40%)
- CUST-2.3** Are you modeling reliability of grid equipment?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In development
 - D. Yes, for at least one asset class
 - E. Yes, for multiple asset classes
- CUST-2.4** Have you piloted remote disconnect/connect technologies for residential customers?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Piloting
 - D. Deployed
- CUST-2.5** Are you assessing the impact on customers of new services and delivery processes such as Home Area Networks (HAN), smart meter installs, dynamic pricing, and/or turning power on/off remotely?
- A. No
 - B. In documented plan with committed schedule and budget
 - C. In process
 - D. Completed
- CUST-2.6** What percentage of smart grid-related pilots and Requests for Proposals (RFPs) specify security and privacy requirements for customer protection?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

Level 3: Integrating

- CUST-3.1** Do you have residential customer segmentation that can enable more tailored customer programs?
- A. No
 - B. Being evaluated
 - C. Segmented (ability to segment based upon a single criterion)
 - D. Highly segmented (ability to segment based upon combinations of criteria)
- CUST-3.2** What percentage of residential customer meters has two-way communication capabilities (e.g., an advanced metering infrastructure)?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-3.3** For what percentage of residential customers have you enabled remote connect/disconnect capability?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-3.4** For what percentage of residential customers have you enabled demand response or remote load control?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-3.5** What percentage of substations are equipped with automated outage detection?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-3.6** What percentage of residential customers have on-demand access to daily (or more frequent) usage data?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

- CUST-3.7** Have you implemented a common customer experience (e.g., look and feel, consistency of message, available information) across at least two residential customer interface channels?
- A. No
 - B. In documented plan
 - C. In progress
 - D. Completed for at least two channels (e.g., web, voice response, hand-held)
 - E. Completed across multiple channels (e.g., web, voice response, hand-held)
- CUST-3.8** Do you provide customer education on how to use smart grid services to curtail peak usage?
- A. No
 - B. Yes, available through passive channels (e.g. web)
 - C. Yes, active, indirect through media or other broadcast channels
 - D. Yes, active, direct and targeted to individual consumers
- CUST-3.9** What percentage of customer products and services have built-in security and privacy controls that meet relevant industry and government standards?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

Level 4: Optimizing

- CUST-4.1** Do you provide support to customers to help them analyze and compare their actual usage against all available pricing programs?
- A. No, or in development
 - B. Limited (<50% of customers or programs)
 - C. Extensive (50% - 90%)
 - D. Yes, for essentially all customers and programs (>90%)
- CUST-4.2** What percentage of circuits are equipped with automatic outage detection and proactive notification?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-4.3** What percentage of customers have on-demand access to near real-time (up to the minute) usage data?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

- CUST-4.4** What percentage of customers participate in demand response or remote load control programs?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-4.5** What percentage of residential customers are provided with the capability for automated response to pricing signals for major energy consumption devices in their premise?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-4.6** For what percentage of customers are in-home net billing programs available (i.e., credit/payment for solar panels, wind, electric vehicle battery to grid)?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-4.7** Have you integrated a common experience across all residential customer interfaces for all services provided (e.g., leveraging common data sources)?
- A. No
 - B. In progress
 - C. Completed for at least two channels
 - D. Completed across multiple channels
 - E. Across all channels

Level 5: Pioneering

- CUST-5.1** What percentage of customers can manage their end-to-end energy supply and usage levels (energy source and mix)?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-5.2** What percentage of customers (including residential) have automatic outage detection at the premise or device level?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%

- CUST-5.3** What percentage of customers is supported by plug-and-play customer-based generation (including necessary support infrastructure such as net billing, control, etc.)?
- A. 0%
 - B. 1 - 25%
 - C. 26 - 50%
 - D. 51 - 75%
 - E. 76 - 100%
- CUST-5.4** Can you provide compelling evidence of assurance of the security and privacy of customer data stored, transmitted or processed on the grid?
- A. No
 - B. Self-generated evidence (e.g., design reviews, code reviews)
 - C. Externally generated evidence (e.g., third-party certifications, third-party reviews)
 - D. Both
- CUST-5.5** Do you play a leadership role in industry-wide information sharing and standards development efforts for smart grid?
- A. No
 - B. For the protection of customer security and privacy
 - C. For the promotion of customer choice and control
 - D. Both

11 Value Chain Integration (VCI)

Level 1: Initiating

- VCI-1.1** Have you identified the assets and programs needed to facilitate load management?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Evaluation and identification underway
 - D. Identification completed
- VCI-1.2** Have you identified distributed generation sources and the capabilities needed to support them?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Evaluation and identification underway
 - D. Identification completed
- VCI-1.3** Have you identified energy storage options and the capabilities needed to support them?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Evaluation and identification underway
 - D. Identification completed
- VCI-1.4** Do you have a strategy for developing, enabling, and managing a diverse resource portfolio (e.g., integration of new resources such as DR, DG)?
- A. No
 - B. In process of creating strategy
 - C. Complete
 - D. Being executed to
- VCI-1.5** Have you identified security requirements to enable interaction with an expanded portfolio of value chain partners?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Evaluation and identification underway
 - D. Identification completed

Level 2: Enabling

- VCI-2.1** Are you providing support for home energy management systems (e.g., via customer portals or in-home displays)?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Moderately (<40% of customers)
 - E. To a great extent (≥40%)
- VCI-2.2** Have you redefined the value chain based upon smart grid capabilities (including DG, micro-generation, energy storage, and other new customers and suppliers)?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Complete
- VCI-2.3** Are you conducting pilots to support a diverse resource portfolio (e.g., distributed generation, demand-side management, demand response, storage)?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Piloting underway
 - D. Piloting activities completed
 - E. Piloting completed and deployment in progress
- VCI-2.4** Are you piloting secure interaction with an expanded portfolio of value chain partners?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Piloting underway
 - D. Piloting activities completed
 - E. Piloting completed and deployment in progress

Level 3: Integrating

- VCI-3.1** Do you have an integrated resource plan in place that includes new targeted resources and technologies (e.g., Volt/Volt-Ampere Reactive (VAR) management systems, demand response, distributed generation)?
- A. No
 - B. In development
 - C. Partly in place (supporting at least one resource)
 - D. Mostly in place (supporting multiple resources)
 - E. Completely in place (supporting all available resources)
- VCI-3.2** Have you enabled customer (including commercial, industrial, and residential) premise energy management solutions with market and usage information?
- A. No
 - B. In development
 - C. A little (<10% of all customers)
 - D. To a great extent (10% - 70%)
 - E. Completely ($\geq 70\%$)
- VCI-3.3** Additional resources (e.g., PHVs, storage, DR) are being enabled or deployed to provide substitutes for market products to support reliability or other objectives?
- A. No
 - B. Resources indentified but not enabled
 - C. At least one new resource enabled
 - D. Numerous new resources enabled
 - E. Continuous identification and enablement process in place
- VCI-3.4** Have you deployed security management and monitoring processes to protect the interactions with your expanded portfolio of value chain partners?
- A. No
 - B. In development
 - C. Security processes are in place within your organization
 - D. Collaborative security processes are in place with at least one value chain partner
 - E. Collaborative security processes are in place across your value chain

Level 4: Optimizing

- VCI-4.1** Are your energy resources (including resources such as Volt/Var, DR, DG) dispatchable and tradeable?
- A. No
 - B. In development
 - C. For one resource
 - D. For two or more resources
 - E. For all available resources
- VCI-4.2** Have you implemented portfolio optimization models that encompass available resources and real-time markets (e.g., to enable response to dynamic market/supply conditions)?
- A. No
 - B. In development
 - C. For at least two resources
 - D. For numerous resources
 - E. For all available resources
- VCI-4.3** To what percentage of residential customers do you offer secure two-way communication via Home Area Networks (HAN)?
- A. None
 - B. In development
 - C. 1 -25%
 - D. 26 – 50%
 - E. 51 – 75%
 - F. 76 – 100%
- VCI-4.4** For what percentage of residential customers do you have visibility and control of large-demand appliances (e.g., air conditioners, water heaters)?
- A. None
 - B. In development
 - C. 1 -25%
 - D. 26 – 50%
 - E. 51 – 75%
 - F. 76 – 100%

Level 5: Pioneering

- VCI-5.1** Have you automated the optimization of energy assets across the full value chain?
- A. No
 - B. In development
 - C. Somewhat (<50% of energy assets)
 - D. Substantially (50% - 80%)
 - E. Extensively (>80%)
- VCI-5.2** Are your resources adequately dispatchable and controllable so that you can take advantage of granular market options (e.g., locational marginal pricing)?
- A. No
 - B. In development
 - C. Somewhat (<50% of energy assets)
 - D. Substantially (50% - 80%)
 - E. Extensively (>80%)
- VCI-5.3** Do your automated control and resource optimization schemes consider and support regional and/or national grid optimization?
- A. No
 - B. In development
 - C. To a limited extent
 - D. Yes, to a significant extent

12 Societal and Environmental (SE)

Level 1: Initiating

- SE-1.1** Does your smart grid strategy or vision address your organization’s role in societal and environmental issues?
- A. No
 - B. Role acknowledged
 - C. Role acknowledged and goals established
 - D. Role acknowledged, goals established, and strategy detailed
- SE-1.2** Have you publicly promoted the environmental benefits of your smart grid vision or strategy?
- A. No
 - B. Informally, no structured communications
 - C. Indirectly through media or other channels
 - D. Directly with customers
 - E. Both directly and indirectly
- SE-1.3** Is your compliance record with environmental regulations made available for public inspection?
- A. No
 - B. Available upon specific request
 - C. Available through multiple channels on demand
 - D. Available and actively publicized
- SE-1.4** Does your smart grid vision or strategy specify your role in protecting the nation's critical infrastructure?
- A. No
 - B. Role acknowledged
 - C. Role acknowledged and goals established
 - D. Role acknowledged, goals established, and strategy detailed

Level 2: Enabling

- SE-2.1** Do your smart grid strategies and work plans address societal and environmental issues (cost increases, global warming, pollution, hazardous materials, spill control, “not in my backyard,” and other public concerns)?
- A. No
 - B. In development
 - C. Moderately (smart grid work plans and strategies address a few issues)
 - D. Extensively (address a broad range of issues)

- SE-2.2** Have you established energy efficiency programs for customers?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. Being piloted
 - D. For at least one customer category or segment
 - E. For all customers
- SE-2.3** Does your organization consider a "triple bottom line" view when making decisions (considering social, environmental, and financial performance measures)?
- A. No
 - B. Under consideration
 - C. In at least one function and/or line of business
 - D. Across all functions and/or lines of business
- SE-2.4** Have you implemented environmental proof-of-concept projects (e.g., solar or wind generation) to demonstrate smart grid benefits to the public and the environment?
- A. No
 - B. In documented plan including committed schedule and budget
 - C. In progress
 - D. Complete
- SE-2.5** Are you making increasingly granular and more frequent consumption information available to customers (including residential)?
- A. No
 - B. Monthly consumption data available
 - C. More frequent than monthly consumption data available
 - D. Daily or better consumption data available

Level 3: Integrating

- SE-3.1** Are your societal and environmental programs within your smart grid strategy measurably effective?
- A. No
 - B. Only informal performance measurement
 - C. Formal performance measurement being implemented
 - D. Formal performance measures, meeting targeted performance
 - E. Formal performance measures, exceeding targeted performance
- SE-3.2** Does your organization make available to customers (including commercial, industrial, and residential) segmented and tailored information that includes environmental and societal benefits and costs?
- A. No
 - B. In development
 - C. A little (<30% of all customers)
 - D. Moderately (30% - 80%)
 - E. To a great extent (≥80%)

- SE-3.3** Has your organization established programs to encourage off-peak usage by customers?
- A. No
 - B. In documented plan
 - C. A little (available to <30% of all customers)
 - D. Moderately (30% - 80%)
 - E. To a great extent (≥80%)
- SE-3.4** Does your organization regularly report on the sustainability and the societal and environmental impacts of its smart grid programs and technologies?
- A. No
 - B. Available upon specific request
 - C. Available through multiple channels on demand
 - D. Available and actively publicized

Level 4: Optimizing

- SE-4.1** Does your organization collaborate with outside stakeholders to address societal and environmental issues?
- A. No
 - B. Key outside stakeholders for key issues
 - C. All stakeholders for key issues
 - D. All stakeholders for all issues
- SE-4.2** Does your organization maintain a public environmental and societal scorecard?
- A. No
 - B. On a limited basis
 - C. Extensively
 - D. Completely
- SE-4.3** Have you implemented smart grid programs (e.g., demand response programs, dynamic pricing signals, and managed control of devices) to shave peak demand?
- A. No
 - B. In development
 - C. On a limited basis (i.e., available to a limited set of customers or with limited options)
 - D. Extensively (i.e., available to >90% of customers with multiple options)
- SE-4.4** For what percentage of customers (including commercial, industrial, and residential) can you actively manage end-user usage and devices and therefore consumption, where appropriate, through your network?
- A. 0%
 - B. 1 – 25%
 - C. 26 – 50%
 - D. 51 – 75%
 - E. 76 - 100%

- SE-4.5** Does your organization fulfill its critical infrastructure assurance goals for resilience and contribute to those of the region and the nation?
- A. There are no explicit critical infrastructure assurance goals
 - B. Some explicit critical infrastructure assurance goals are being achieved
 - C. All explicit critical infrastructure assurance goals are being adequately fulfilled
 - D. Explicit critical infrastructure assurance goals are tested and proven to be adequately fulfilled
 - E. Compelling evidence exists of comprehensive goal fulfillment and of contributions to the region and the nation as a whole

Level 5: Pioneering

- SE-5.1** Do your organization's triple-bottom-line goals align with local, regional, and national objectives?

- A. No
- B. Limited alignment
- C. Aligned
- D. Aligned and organization meets or exceeds

- SE-5.2** What percentage of customers are enabled to control their energy-based environmental footprint through automatic optimization of their end-to-end energy supply and usage level (energy source and mix) based on customer-selected preferences?

- A. 0%
- B. 1 – 25%
- C. 26 – 50%
- D. 51 – 75%
- E. 76 - 100%

- SE-5.3** Is your organization a leader in developing and promoting industry-wide resilience best practices and/or technologies for protection of the national critical infrastructure?

- A. No
- B. No, but members of our organization participate in relevant industry and/or government forums
- C. Yes, members of our organization are leaders in relevant industry and/or government forums
- D. Yes, and we pioneer and promote best practices, methods, and/or technologies for smart grid resilience