



Five Smart Grid Questions

Every Utility Executive Should Ask (and How to Find the Right Answers)

IN YOUR SMART GRID TRANSFORMATION, you'll want to see clearly where your utility organization needs to go—and how to most efficiently and effectively move forward.

Executive Summary

Investment in the future of electricity generation, transmission, and distribution continues to grow, with billions of dollars pursuing smart grid benefits such as

- better management of peak demand
- improved grid reliability
- increased operational efficiency

Before embarking on an investment program, a utility should develop its vision for smart grid transformation and create a roadmap to reach its destination. This paper recommends a tool, the Smart Grid Maturity Model (SGMM), for planning and measuring smart grid progress. The SGMM helps a utility answer:

1. Where are we now?
2. How do we compare with similar utilities?
3. Where do we want to go?
4. How will we go forward with modernization?
5. How can we track our progress?

Utilities need to know how to best to invest in smart grid

It is important for utility executives to “define a smart grid vision and develop a road map to get there,” according to McKinsey and Company.¹

Since 2009, electric power utilities and the Software Engineering Institute (SEI) have been collaborating to create and deliver the SGMM Navigation Process, in which industry service providers use a management tool in guiding utilities to

- inform their smart grid visions
- gain input for smart grid transformation roadmapping efforts

The management tool is the Smart Grid Maturity Model (SGMM), a comprehensive model that includes 175 smart grid characteristics that ensure utilities will be able to consider all aspects of grid transformation.

Seeing the need in industry for a tool to help in smart grid planning, utilities in the Global Intelligent Utility Network Coalition (GIUNC) created the SGMM. With support from the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability—along with input from a broad array of stakeholders—the Software

“using the SGMM Navigation process... was helpful in fostering candid, fact-based discussion of where we have been, where we are today, and where we expect to be in the future”

—Vice President, Business Transformation

1. Asthana, Anjan; Booth, Adrian; and Green, Jason. Best practices in the deployment of smart grid technologies. McKinsey and Company, 2010.

Engineering Institute (SEI) fosters the adoption of the model by electric utilities and service providers and works to advance smart grid software engineering.

The SEI created the SGMM Navigator Certification Program and the Navigation Process to promote consistent, high-quality, and broad adoption of better smart grid practices using the SGMM.

The SGMM Navigation Process Helps Utilities Answer Key Planning Questions

1. Where are we now?

A utility that follows the SGMM Navigation Process can learn about its readiness to take full advantage of an investment in smart grid, through understanding its current maturity in eight domains:

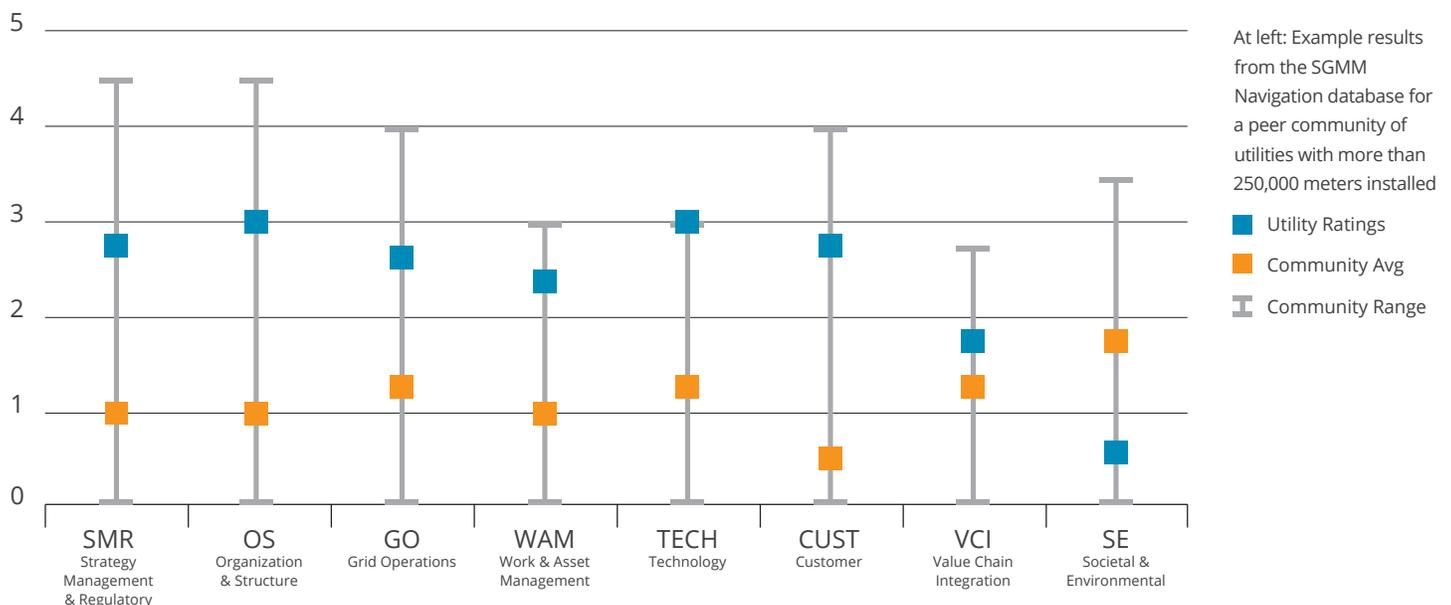
- Customer
- Grid Operations
- Organization and Structure
- Societal and Environmental
- Strategy, Management, and Regulatory
- Technology
- Value Chain Integration
- Work and Asset Management

Why this is important: Moving ahead with investment before assessing the current state can lead to costly false starts, crippling cost overruns, and sub-par results.

2. How do we compare with similar utilities?

The SGMM Navigation Process also provides data on where a utility stands compared to similar utilities.

- The SGMM Navigation community comprises a continually growing number of electric utilities worldwide, totaling more than 160 as of November 2016
- public and investor-owned utilities with a median size of 1 million meters and a range in size of 40 meters to 40 million meters



- utilities engaged in generation, transmission, distribution, or a combination of those functions

Why this is important: Learning from similar utilities brings insight into best practices and lends clarity to decision making.

3. Where do we want to go?

An SGMM Navigation assessment also helps a utility determine its smart grid aspirations. In the SGMM Navigation Process, stakeholders from across the utility's enterprise reach consensus—not only on today's state of smart grid transformation readiness but also on the envisioned state at an agreed-to time horizon.

Why this is important: Working together, all the key players from a utility reach consensus about the organization's smart grid aspirations that provides input for strategic planning.

4. How will we go forward with modernization?

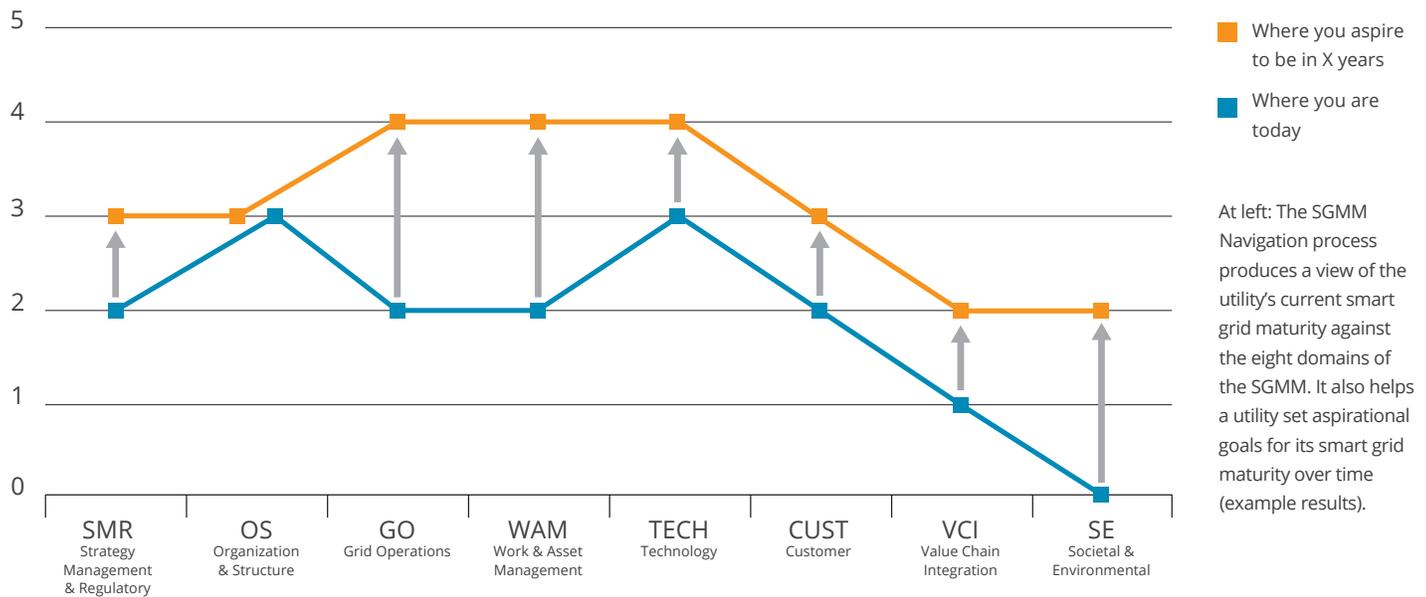
The SGMM Navigation Process provides input into a utility's smart grid roadmapping efforts. The utility can use its own "as-is" profile and "to-be" aspirations, as well as a peer community view for comparison—all work products of the SGMM Navigation Process—to assess and prioritize areas for investment.

Why this is important: Stakeholders prioritize areas for a modernization effort, using specific and credible information.

5. How can we track our progress?

The peer community view that SGMM Navigation affords is valuable for comparison. However, the best benchmark for a utility is itself. Having established targets for roadmapping and investment through one application of the SGMM Navigation Process, a utility can check progress against its goals by periodically repeating the assessment.

Why this is important: A repeated assessment fosters discussion among stakeholders based on the facts of where a utility is in its transformation. It also helps a utility determine whether it should modify its course, due to shifting priorities and needs.



SEI-CERTIFIED SGMM NAVIGATORS

can work with you to find your answers for smart grid transformation.

Take a first step toward SGMM Navigation assessment by finding an SEI-certified SGMM Navigator who suits your organization: sei.cmu.edu/partners

You might also consider taking these steps:

- Join the SGMM mailing list. Write to us at info@sei.cmu.edu
- Join our group on LinkedIn, the Smart Grid Maturity Model User Forum.
- Download SGMM documents at sei.cmu.edu/smartgrid/start/downloads
- Follow SGMM on Twitter at twitter.com/SGMM_Navigator

SGMM in Use

Roadmapping a Smart Grid for Publicly Owned Utilities

As part of a project to define a pathway to a 2020 smart grid vision for publicly owned utilities, an energy commission called on an SEI SGMM Partner for help. The SEI-Certified SGMM Navigator guided each utility's stakeholders through a workshop to complete the SGMM Compass survey. By completing the Compass survey, each utility provided input important for characterizing its smart grid modernization status.

The SEI-Certified SGMM Navigator used the survey results to develop comprehensive assessments of current activities, including views of how each utility compares with peers who have already been assessed in the SGMM Navigation Process.

Utilities were then lead in aspirations workshops to provide views of their future-state visions. Implementation roadmaps—driven by the actions and obstacles identified in the aspirations workshops—showed participating utilities how to bridge the gaps between current state and aspirations.

The energy commission's utilities in the project saw immediate benefits from the SGMM Navigation Process:

- For some, the survey and aspirations workshops provided the first opportunity to formally review and plan smart grid activities.
- For others, the results benchmarked tremendous progress in the advancement of their smart grid planning and deployment efforts—essential evidence needed to maintain financial support for their initiatives.
- For still others, the results provided support for a “go-slow” approach to smart grid deployment.

About the SEI

For four decades, the Software Engineering Institute (SEI) has been helping government and industry organizations to acquire, develop, operate, and sustain software systems that are innovative, affordable, enduring, and trustworthy.

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