Process Evaluation of BPA's Energy Smart Industrial Program

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Forward

- Thank you for your interviews and contributions to this research
- We seek your feedback on our results
- Note: We edited some quotes for brevity; exact quotes appear in the report

Introduction and Overview

- Summary of Program Results
- Program Overview
  - *Program delivery*
  - *Program theory*
- Methodology
- Utility and End User Program Experiences
- Implementation Effectiveness
- Administrative Effectiveness

Summary of 2010-2011 Program Results

6th Power Plan requested 27 aMW

The program delivered 42 aMW—enough to supply the energy to power over 25,000 homes

Imagine all homes in Kirkland & Algona, WA converted to net-zero homes

* Figures are 2010 estimates published in *State of Washington Office of Financial Management: 2012 Population Trends*

Summary of Program Results: Metrics

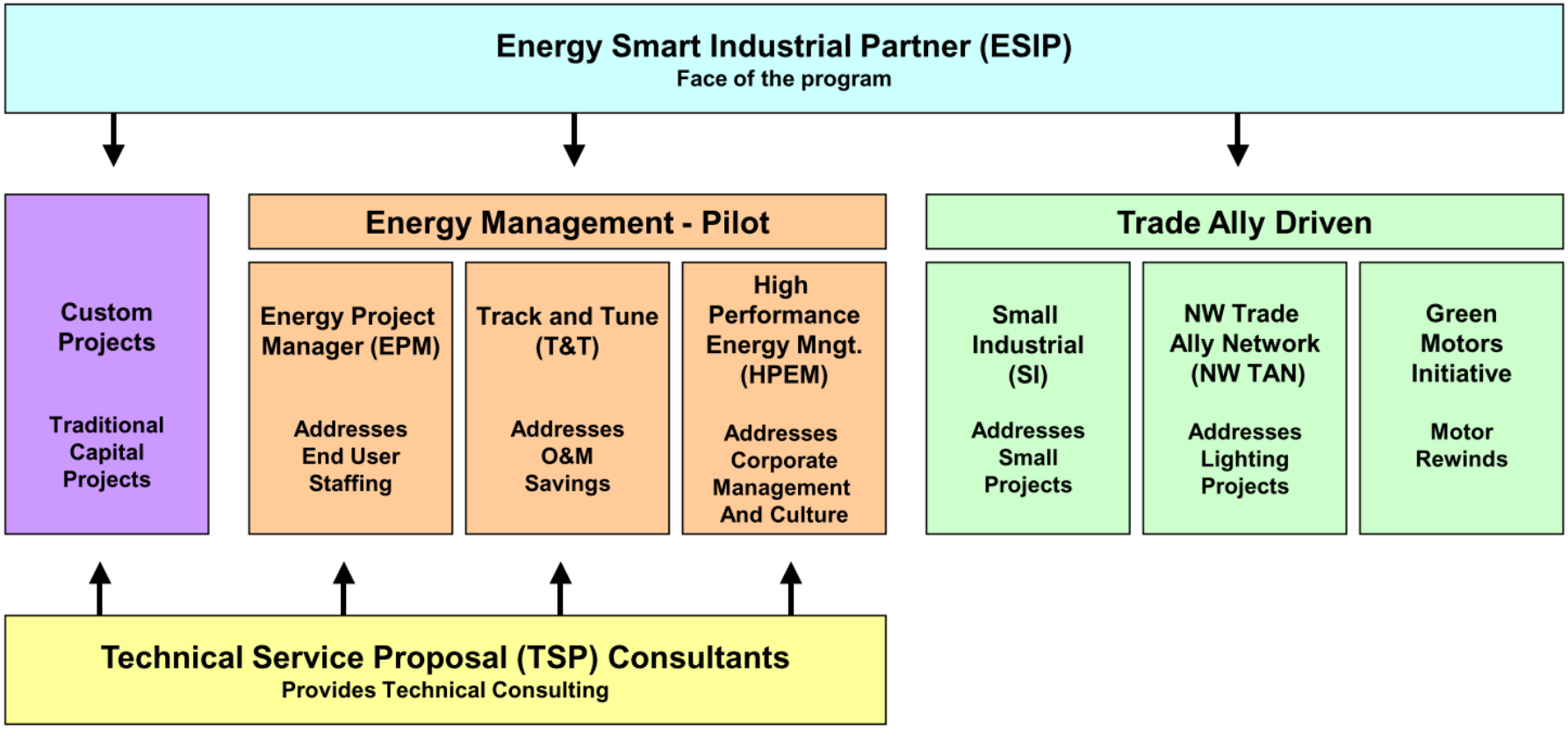
What it takes to achieve 42.13 aMW

BPA Service territory:
300,000 square Miles

- 105 utilities currently enrolled
- Delivered program via
  - *Implementation contractor*
  - *Two sub-contractors*
- Leveraged 84 trade allies
- Employed 14 TSP firms

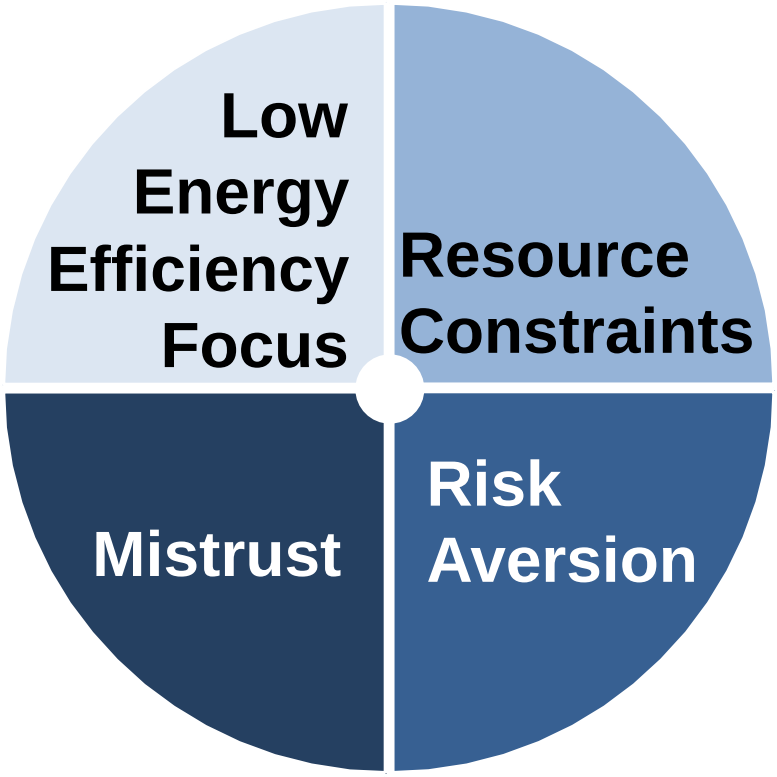
➢ **Yielding 1,040 projects**

Program Overview



Program Theory: Barriers

This Program is designed for a market characterized by



Program Theory: Strategies

What strategies should address these barriers

Program Theory: Tactics

ESIP & TSPs perform industrial scoping studies typically not performed by utilities or end users

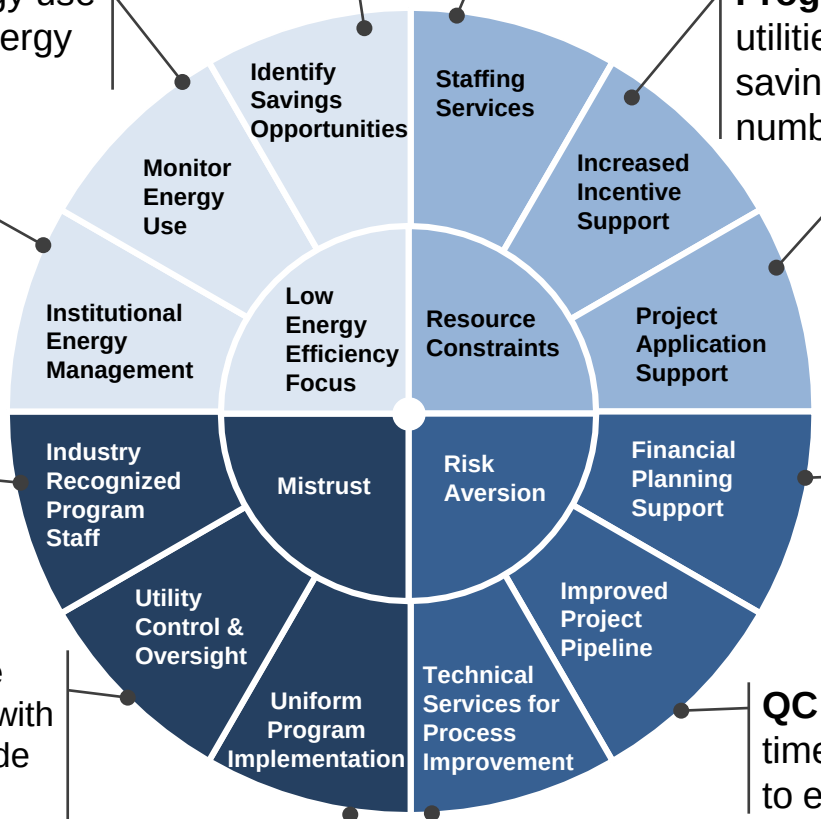
ESIP helps utilities and end users overcome staffing barriers associated with energy efficiency projects

EPM internal staff monitor energy use and identifying opportunities; energy projects part of capital planning.

Program incentives increased for utilities, and end users on a per savings basis to help increase the number and size of projects funded

HPEM, T&T Goal setting, energy monitoring, and planning driven by advanced O&M approaches

Applications prepared by ESIPs and checked by QA to reduce utility and end user time



ESIP & TSPs perform industrial scoping studies typically not performed by utilities or end users

Project tracking database helps utilities approve projects with understanding of maturing project commitments; **TSP QA scoring** helps reduce risks to utilities from higher savings actuals

Account plan and ESIP as single point of contact provides utilities with assurances that program will provide utilities desired level of oversight

QC process reduces approval time—prolonged approval is risky to end users' project management

Uniform **marketing materials and incentives**

ESIP &TSP provide technical support to end users to reduce perceived risk posed by added efficiency equipment and processes

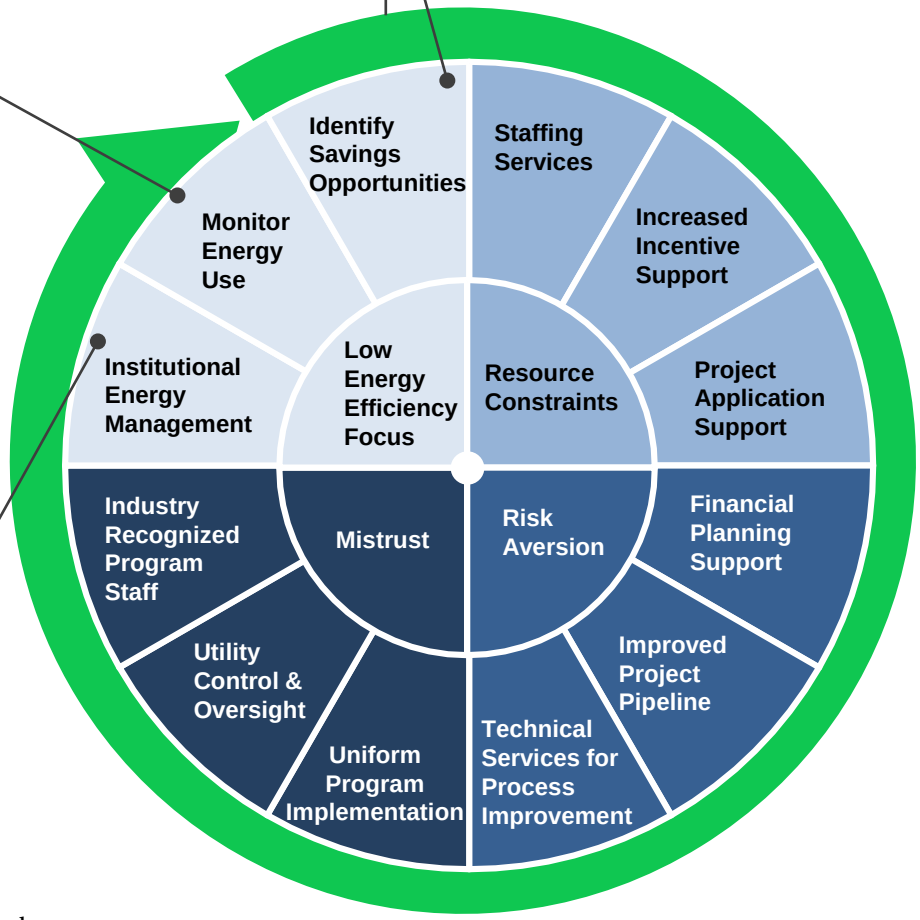
Program Theory: Whole Plant Energy Management Tiers*

Level 1 (Plant Energy Mngt.): Preventative maintenance, consider O&M, application of some new technologies

ESIP & TSPs perform industrial scoping studies typically not performed by utilities or end users

Level 2 (Energy Project Mngt.): Assigned energy responsibility, tacking energy as controllable expense

EPM internal staff monitor energy use and identifying opportunities; energy projects part of capital planning.

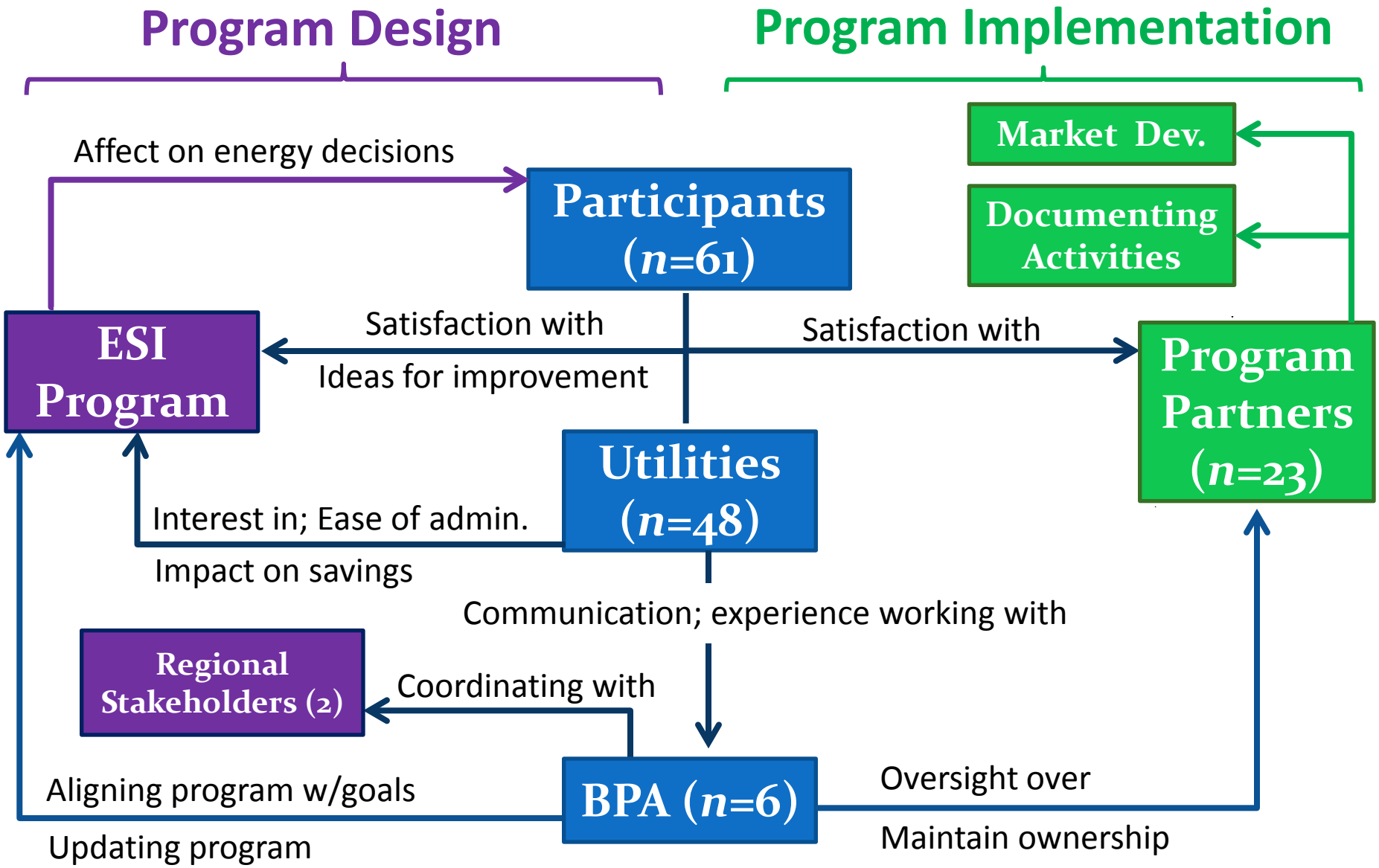


Level 3 (Integrated Plant Mngt.): Adopt energy mngt. Plan, advanced O&M, benchmarking energy intensity

HPEM, T&T Goal setting, energy monitoring, and planning driven by advanced O&M approaches

*Source: System Optimization Measures Guide for 6th Power Plan, SEG, March 23, 2009
Industrial Energy Management Assistance, Jennifer Eskil, December 9, 2011

Methodology: Research Questions / Sample



Methodology: Survey Instruments Scales

Survey Response Scales

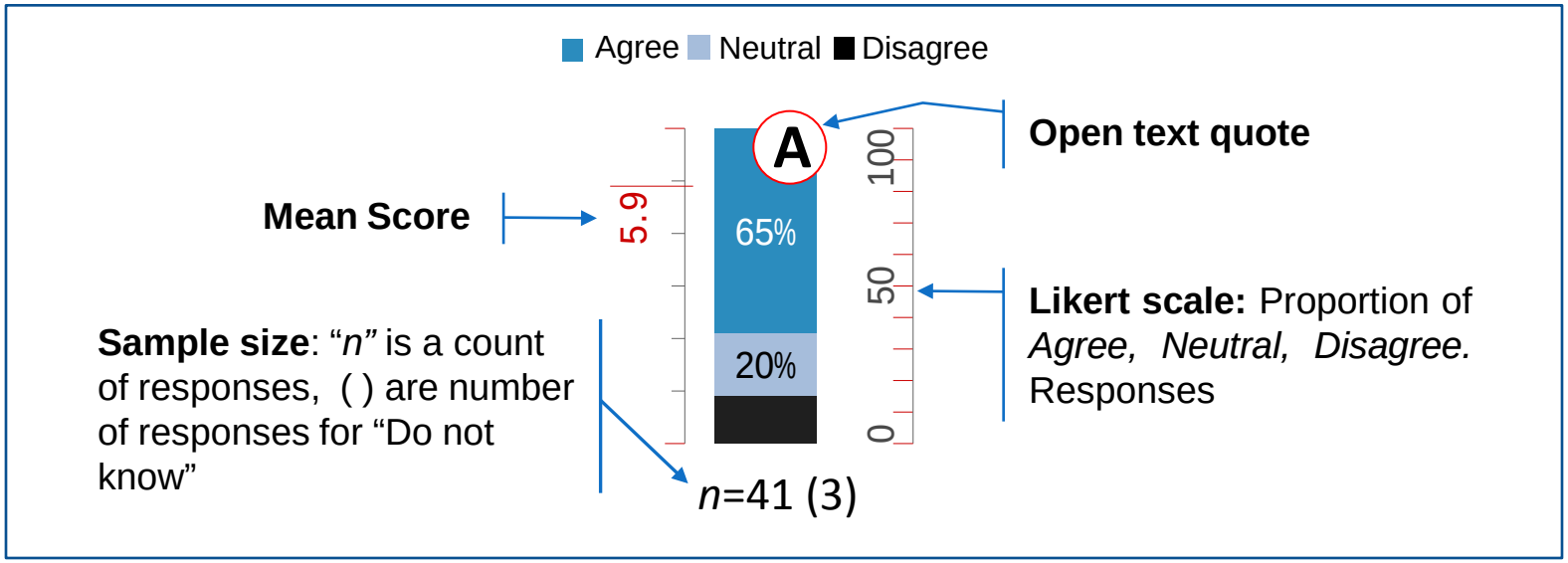
7-point agreement scale:

- **1** strongly disagree
- **4** neither agree nor disagree
- **7** strongly agree

Response Categories

Responses re-coded into 3 agreement categories:

- 1 & 2 = **disagree**
- 3, 4, & 5 = **neutral**
- 6 & 7 = **agree**



Utility and End User Program Experiences

- Utilities and end users are the authorities on how the program is working for them
- We surveyed them and learned…

Utility and End User Program Experiences

- Utilities and end users told us about:
  - Experiences with the program, program partners, and its processes
  - Expectations about the program's value to them
  - Behavioral changes resulting from program participation

- Program components evaluated:
  - **Resource components:** Custom Projects, Small Industrial, Enhanced Lighting
  - **Energy Management Pilot components**: Energy Project Manager, Track and Tune, HPEM

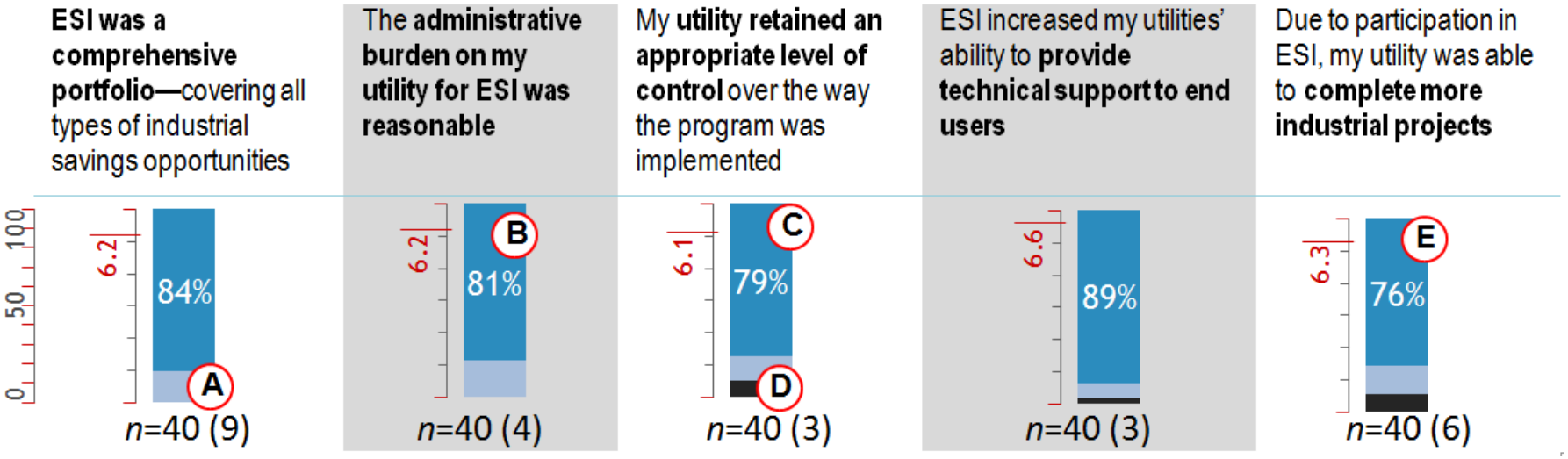
Utilities' Overall Program Experiences

- **High utility participation**
  - **Comprehensive** program offer
  - **Low administrative** burden on utilities
  - Expanded **technical support**

- **Challenges**
  - A **few larger utilities** concerned they are <u>left out of programs' design</u>
  - **Some smaller utilities** believe they <u>do not have enough industrial end users</u> to participate

➢ **Suggestion:** Consider organizing program components and features for larger and smaller utilities

Utilities' Overall Program Experiences



A: "We only use ESI as a complement to our portfolio."

B: "I had 2 similar projects, one by the facility's consultant, one by a TSP. I had to rework the entire engineering analysis of the consultant's project (120 hours of my time). The TSP did a wonderful job."

C: "ESI keeps me informed about what is going on. It's easy for me to deal with the program. It's almost unreal."

D: "We would have liked more influence over the program design. BPA tends to do the 'one size fits all' when there are significant differences between large and small utilities. This has limited our ability to leverage the program."

E: "Having an ESI representative to handle the Industrial projects was a big part of our success. We would have never generated those savings without ESI."

Top 3 Non-Energy Benefits Motivating End Users to Pursue EE Projects

- Commitment to **continuous improvement**
- Commitment to **reduced environmental impact**
- Recommendation from a **technical study**

Resource Components: Custom Projects

- **Strength**
  - High end user satisfaction with CP & ESI reps
  - Success in working with end users early in project planning
  - CP resonates with commitment to continuous improvement
- **Challenges**
  - Slow approval process / confusion over COTR seen by some utilities as risk factors for end user
  - Some utilities concerned incentive rates are too high to sustain
- **Suggestions**
  - Provide market actors with clear instructions on how to navigate project approval processes
  - Involve utility input with setting incentive levels

Resource Components: Small Industrial

- **High utility and end user satisfaction**
- **Challenge**: Projects processed through MV "light"

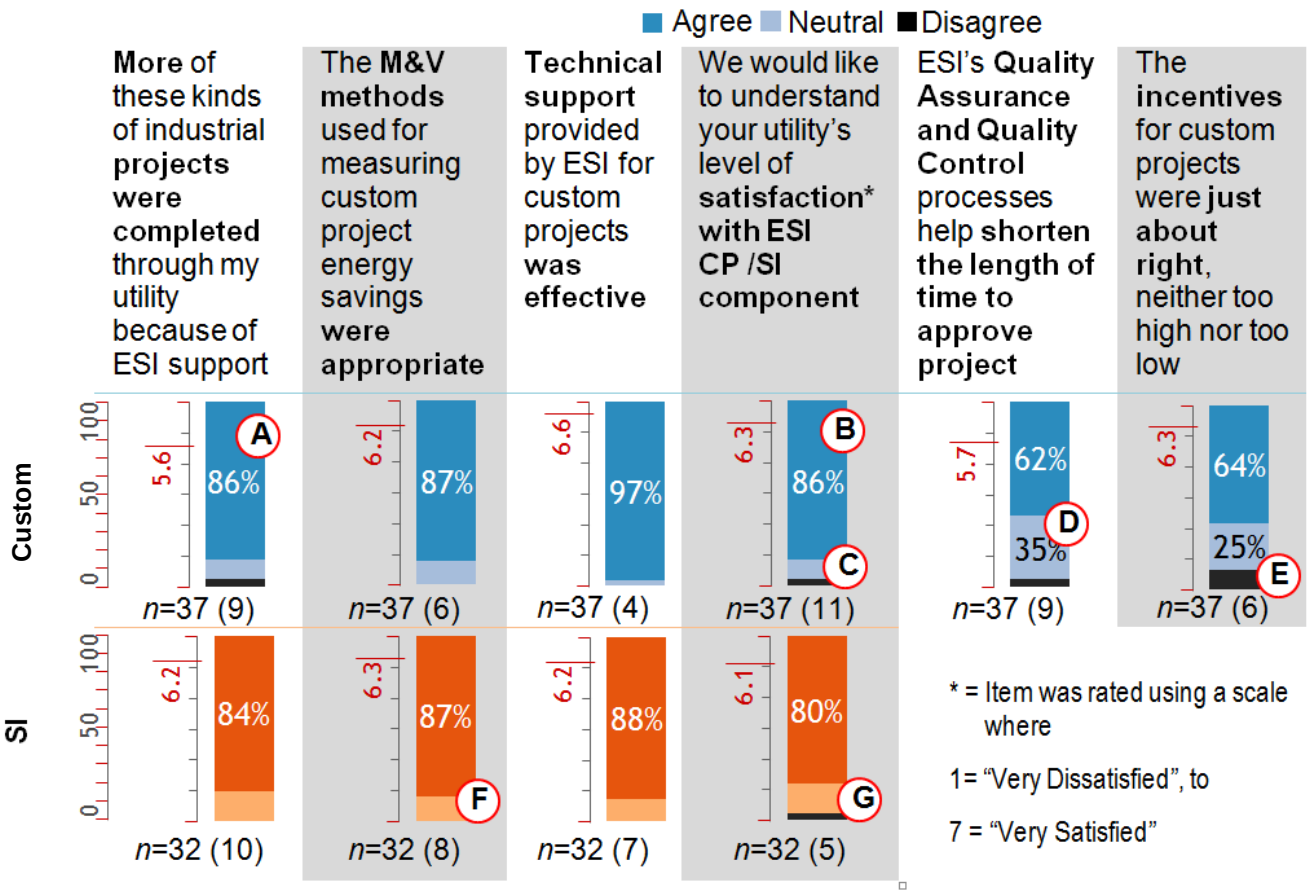
➢ **Suggestion:** The small industrial component should **develop or work with regional partners to acquire additional calculators**, the use of which is likely to reduce the cost to serve this sector.

Resource Components: Enhanced Lighting

- **Strengths**
  - Leveraging work from 20-30 TAs
  - Trade ally training, sales, and technical support offered through Northwest Trade Ally Network
- **Challenge**
  - Rural areas lack TAs with lighting focus
  - ~50% of projects involving lighting specialist input are in one service territory

➢ **Suggestion:** Expand ESIP role in rural areas to include focus on identifying lighting opportunities and working with TAs

Utilities' Experience with Resource Components



A: "ESI enabled us to offer technical knowledge and complete projects."

B: "Higher incentives, ESIP's technical support, and ability to interface with BPA made the program successful."

C: "I tell my customers to avoid ESI custom projects. The customers assume all the risks. When the project will be approved, the incentives, whether it will even be accepted."

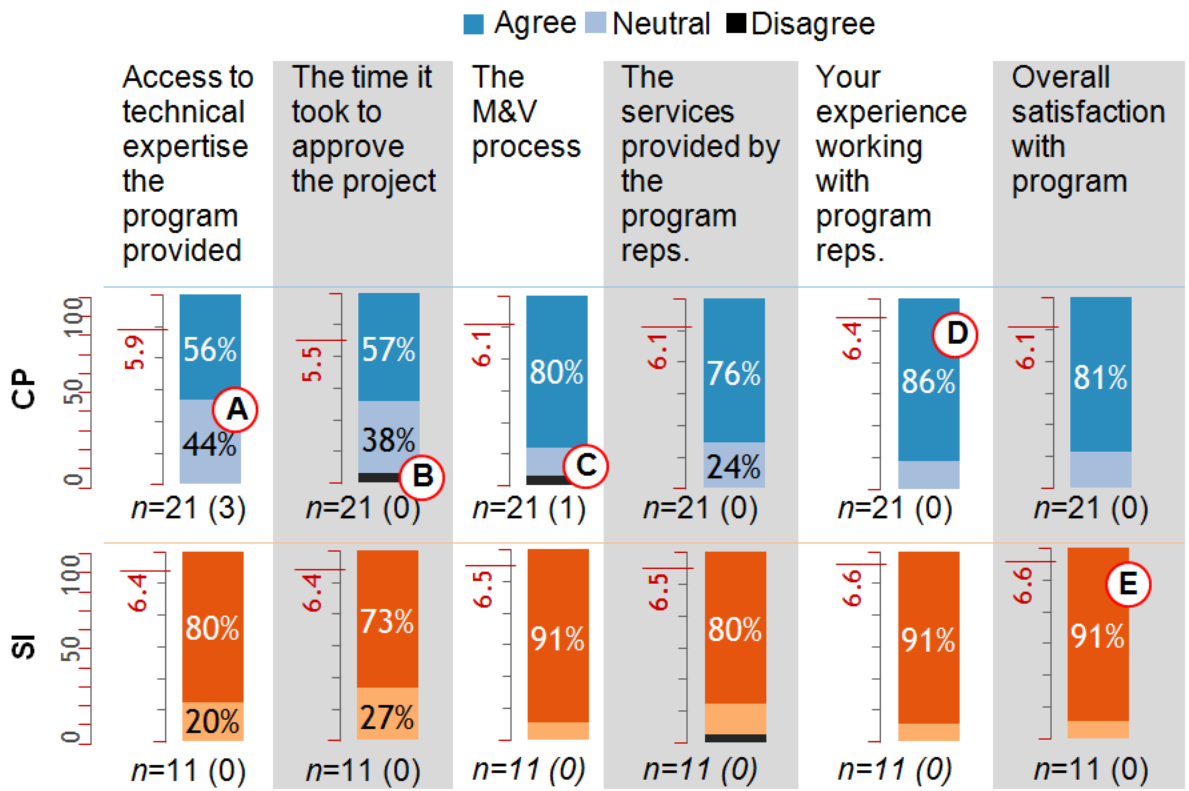
D: "QA/QC process must be slowing projects down because approval times take too long."

E: "The savings levels are too high; they are not sustainable. The region and BPA had to cover the costs. Now incentives will require more BPA support. The customer needs some skin in the game."

F: "All small industrial should been deemed savings."

G: "It would be helpful if there were more measures in this program."

End Users' Experience with Resource Components



A: Evaluators' observation - End users served by smaller eastern region utilities

B: "We have been waiting to hear back about our project for over a month."

C: "It was difficult to get BPA to accept our facility data."

D: "We knew nothing about energy efficiency prior to working with program; ESIPs have been really helpful."

E: "We have vastly increased production and at the same time have held energy use constant."

Energy Management Components

Overview of Outcomes

- Participation leads to long-term EM focus
  - Greater employee awareness of energy efficiency
- After program support ends:
  - 21 of 22 EM participants plan to continue EM activities
  - 16 of 22 plan to add EM activities

Energy Management: Energy Project Manager

- **Strengths**
  - Utilities view program to be highly effective at increasing project volumes
  - Participants targeted opportunities
- **Challenges** relate to slowed CPP approval times

Energy Management: Track & Tune

- **Strengths**
  - Participants acting on 85% of recommended action items
  - Some participants beginning to use sub-metered data in their custom reports

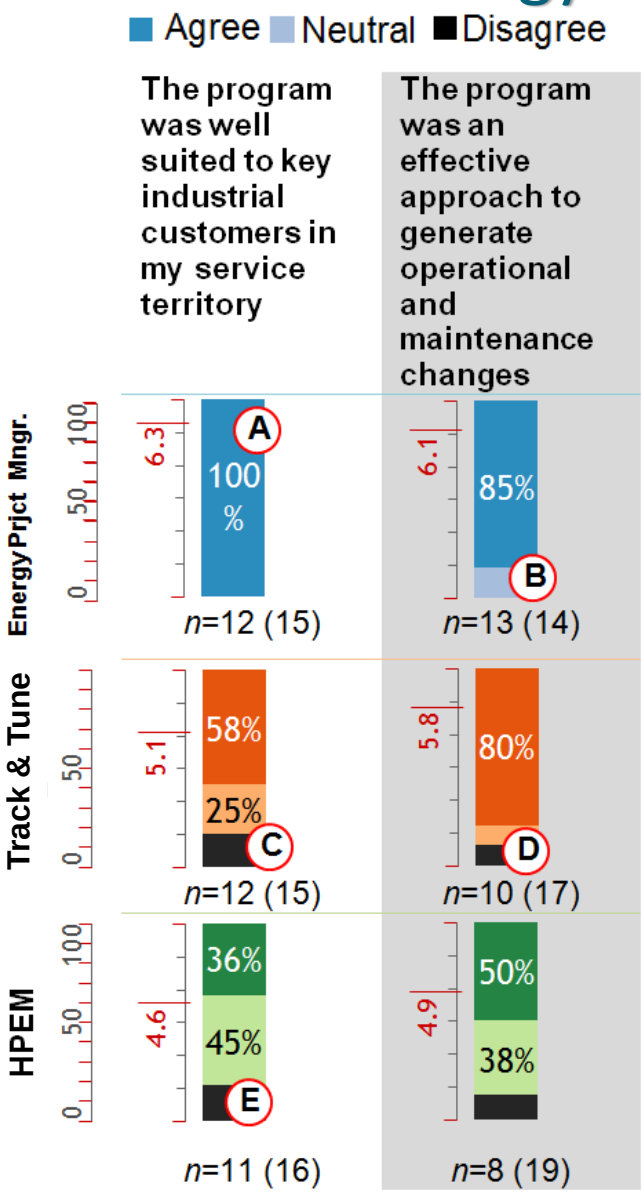
- **Challenges**
  - Low utility participation from concern over long 3 and 5 year project incentive periods
  - Sub-metering, invoicing procedures, verification costs prohibitive for smaller opportunities

➢ **Suggestion:** Test one year incentive period

Energy Management: HPEM

- **Strengths**
  - Cohort meetings help verify effectiveness of potential projects
  - CUSUM report effective for explaining energy use across multiple departments
- **Challenges**
  - Varied technical sophistication of participants; challenge of developing shared curriculum and staging project timing goals
  - HPEM participation too costly for smaller opportunities
  - Some territories do not have enough large end users
- **Suggestion**
  - Modify training to support identification and implementation of energy savings projects earlier in the training
  - Assess less expensive options for HPEM training delivery, such as training via webinars

Utility Perspectives on the Suitability of Energy Management Pilot Components



A: "To fund a position that delivers EE is a good move. EPM are held accountable by their own company, which doesn't want to lose the EPM funding. Company has a bigger stick over EPM. Prior to program, projects were developed by volunteers in company."

B: "EPMs are not trained by program. It is a contracting mechanism to produce projects. EPMs have to have training through something like HPEM. The funding just secures a position."

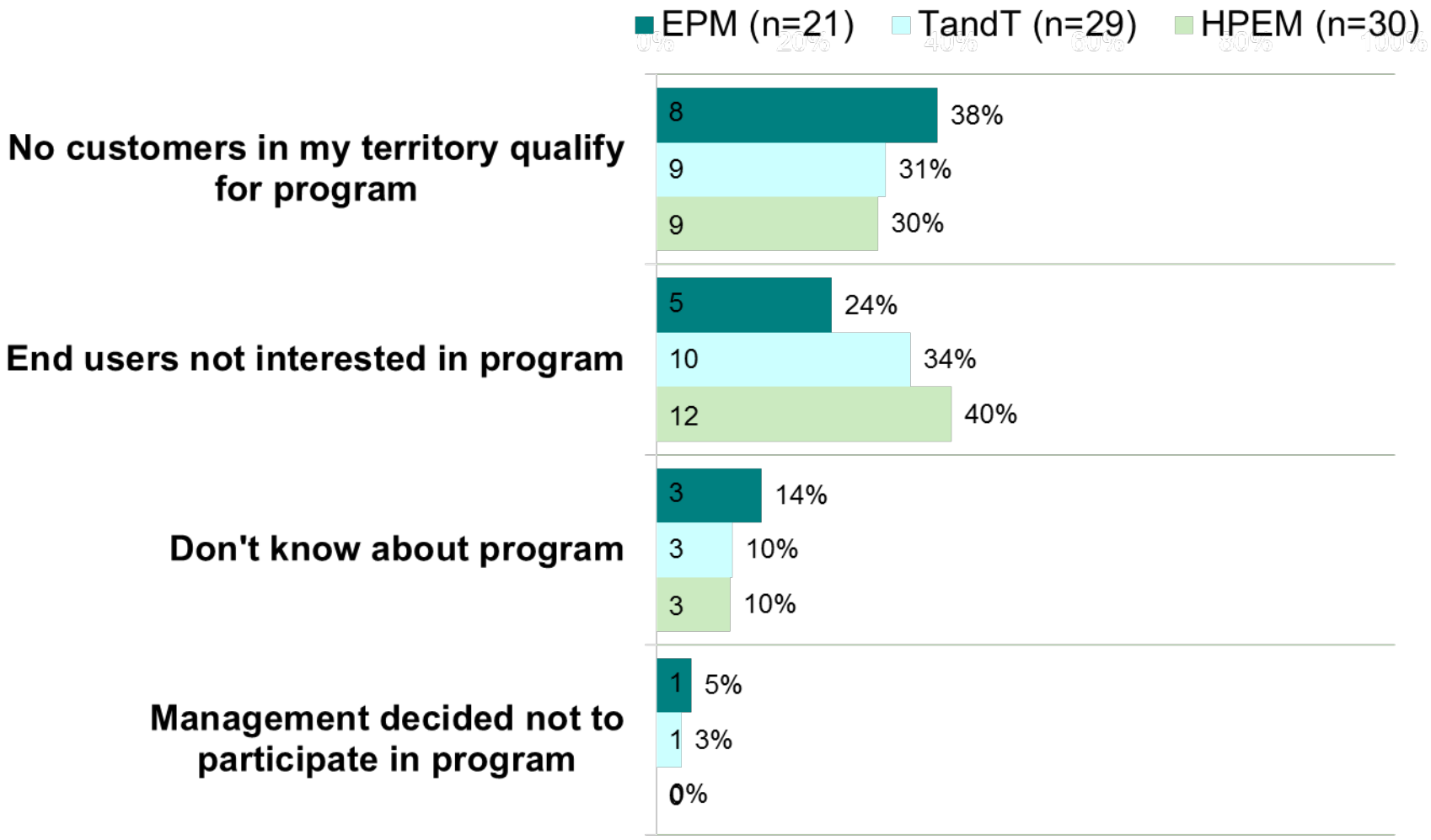
C: "The program has a specific dollar amount for monitoring, and a high ceiling for customers they want to work with. Yet they offer small amounts of money for metering needed to do T&T. There is a mismatch between the customer type they are targeting and the funds available for metering."

D: "This is a bad program. The region needs to look for hard savings not lifestyle-in-the-moment savings."

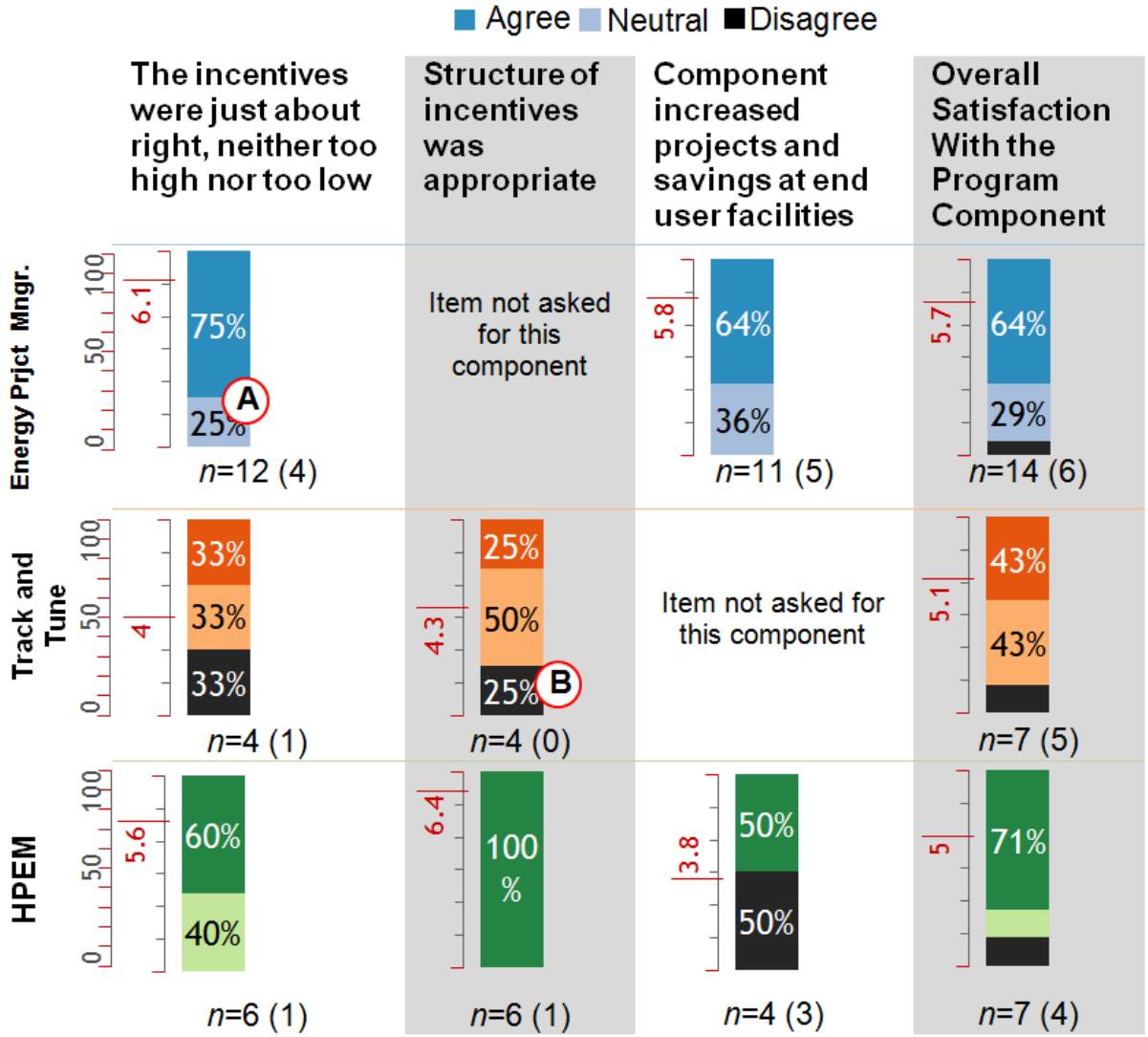
E: "We don't have enough cohorts to make HPEM work with our one large customers."

F: "We marketed HPEM with the launch of the program, but our customers either didn't qualify, or were not interested."

Top Reasons Why Utilities do not Offer Energy Management Components



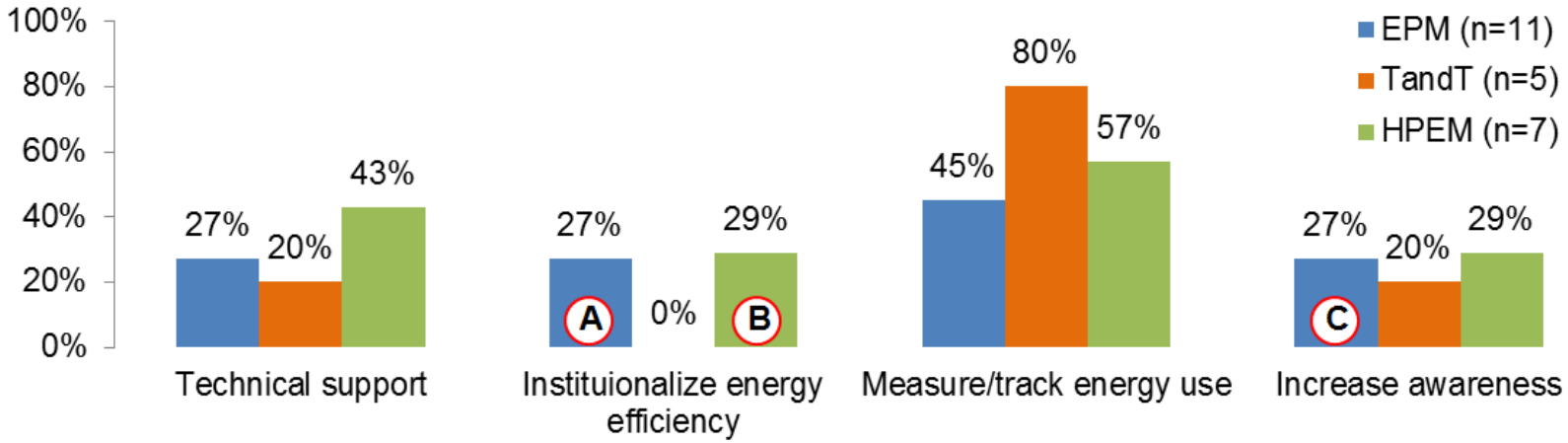
Utility Experiences with Energy Management Pilot Components



A: "The program forced us to measure savings at the bus bar, not for the site, which is our way of measuring savings. This caused budget issues for us because reported savings were greater than planned."

B: "We are promising funds 5 years out and we have no assurance the funding is going to be there. There is a mismatch between longevity of program and funding mechanisms."

End User's Report: Aspects of EMP Critical to Continuous Process Improvement



A:"We have already done a lot. The EPM has helped us raise awareness of EE in the company down to the smallest wrench turn."

B: "We are now reapplying sensible perspectives to non-typical areas. Just like you shut down a refrigeration condenser when it is not needed, we now reapply that concept to a process heater."

C: "Raising awareness across the organization. The dedicated EMP role pushes projects across departments such as operations, engineering, and finance. The EPM role can tie these folks together and get a project implemented."

End User EMP Participants' Top Suggestions for …

Changes Leading to Greater Energy Efficiency:

- Train others in company about program (All)
- Make program funding more consistent (HPEM, EPM)
- Provide technical info about impacts from behavior (T&T)

Additional Resources to Support EM Activities:

- More incentives (ALL)
- Additional technical support from program (ALL)
- Information about new technologies (T&T)

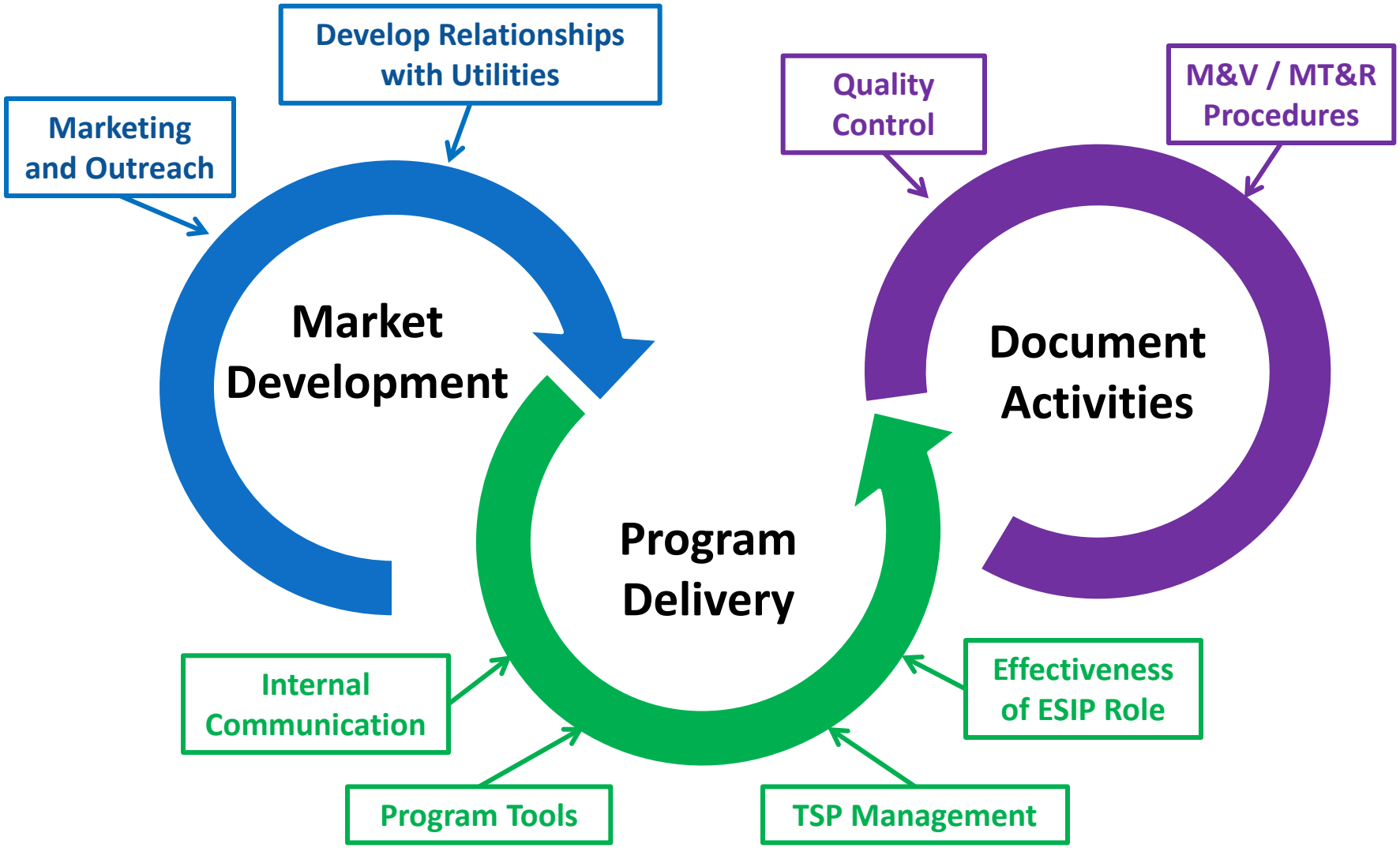
Implementation Effectiveness

Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution.

—William A. Foster

Implementation

Quality is never an accident; it is always the result of high intention, sincere effort, intelligent direction and skillful execution.—William A. Foster, WWII Medal of Honor recipient



Implementation: Strengths

Effective outreach and customer relationship development:

- Engaging market actors to help drive program participation
- Deepening relationship with end users' operations / business management
- Program influencing projects in early stages of project planning

Utilities report high levels of **satisfaction with ESIPs communicating project progress**

Program consistently followed **rigorous M&V procedures –** assessment anticipates an impact evaluation will support M&V'ed realization rates

Implementation: Challenges

Some utilities would like more support from ESIPs on **Energy Management Pilot marketing strategies**

Eastern region end users are less confident in program representatives' industry reputation

HPEM

- Some end users question reliability of MT&R plans for HPEM projects
- No BPA walk throughs of end user facilities with HPEM projects

Implementation: Suggestions

Have ESIPs train utilities how to target customers and **market Energy Management components**

Conduct technical and market potential of eastern region to guide allocation of ESIP time

Energy Project Team should contact all HPEM project managers and discuss their expectations about MT&R reliability

Impact assessment should be conducted

Administrative Effectiveness

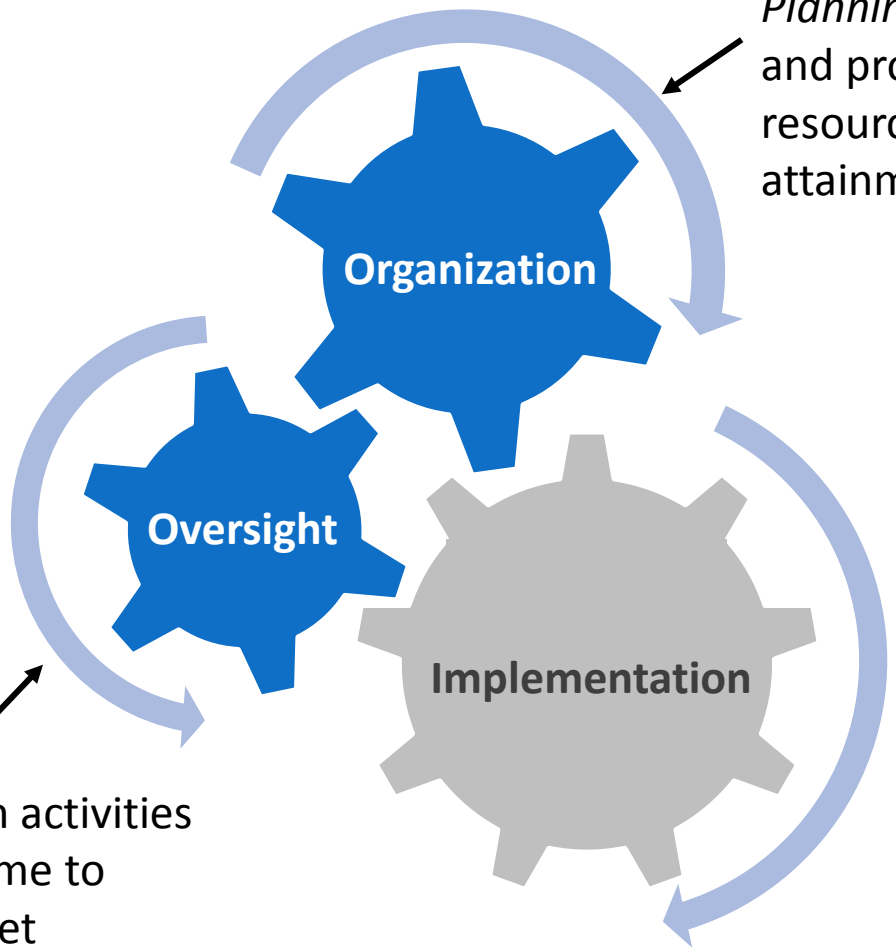
The secret of all victory lies in the organization of the non-obvious.

—Marcus Aurelius

Administration

Administrations make plans, and ensure that those plans are kept

Planning—Developing structures and processes to organize resources around goal attainment



Correcting program activities and plans in real-time to ensure goals are met

Program Administration: Strengths

Program well organized

- Program goals clearly stated / contracts tied to goals
- Program manual clearly defines roles
- Standardized incentives / docs improve TA marketing

Maintaining program ownership

- Reviewing implementer communications
- Enforcing corrective actions
- Implementers following communication /branding protocol
- Revising program design per market realities

Coordinating with regional stakeholders

Program Administration: Challenges

Program branding confused some utilities about difference between contractors and BPA staff

Erosion of TSP confidence in TSP management may consolidate end user relationships around implementation contractor's TSPs

Looking forward: The industrial market may view **revised 2012 incentive structures** as an element of financial **risk**

Program Administration: Suggestions

Communications with utilities from BPA staff should **elevate BPA's brand identity over ESI's**

Create a process to support BPA COTRs coordination with utilities aimed at ensuring ESI incentives are planned in the utility's overall EEI funding

BPA's Evaluation Summary: Take 1

- Huge thank you to RIA for great work and to the ESI team for their ongoing support.
- This evaluation is lengthy and complex, reflecting the complexity of the program.
- The process evaluation is positive on the 2010-2011 program design, implementation and administration.
  - *BPA team has done great project management and has very clear program documentation*
  - *Cascade is working effectively with the market and conducting M&V in a best-practice way*
- The evaluation reflects that the future may not look like the past given the major budget changes in the post-2011 framework.

BPA's Evaluation Summary: Take 2

- Energy management pilot had some positive, some mixed responses
  - *Energy project manager seems most accepted*
  - *Utilities had most concerns about track and tune, a few about HPEM*
- Program tweaks that stand out to me:
  - *Work on the TSP issue to can keep lines of communication open in some way; they are important to keep happy*
  - *Create a process to develop and use calculators in a standardized way*
  - *Most negative feedback is surrounding the COTR approval process – keep a team looking at this*
  - *Make sure the database has standardized data so the various systems can be merged together*