Ameren Illinois Utilities C&I Evaluation Contractor Presentation to SAG

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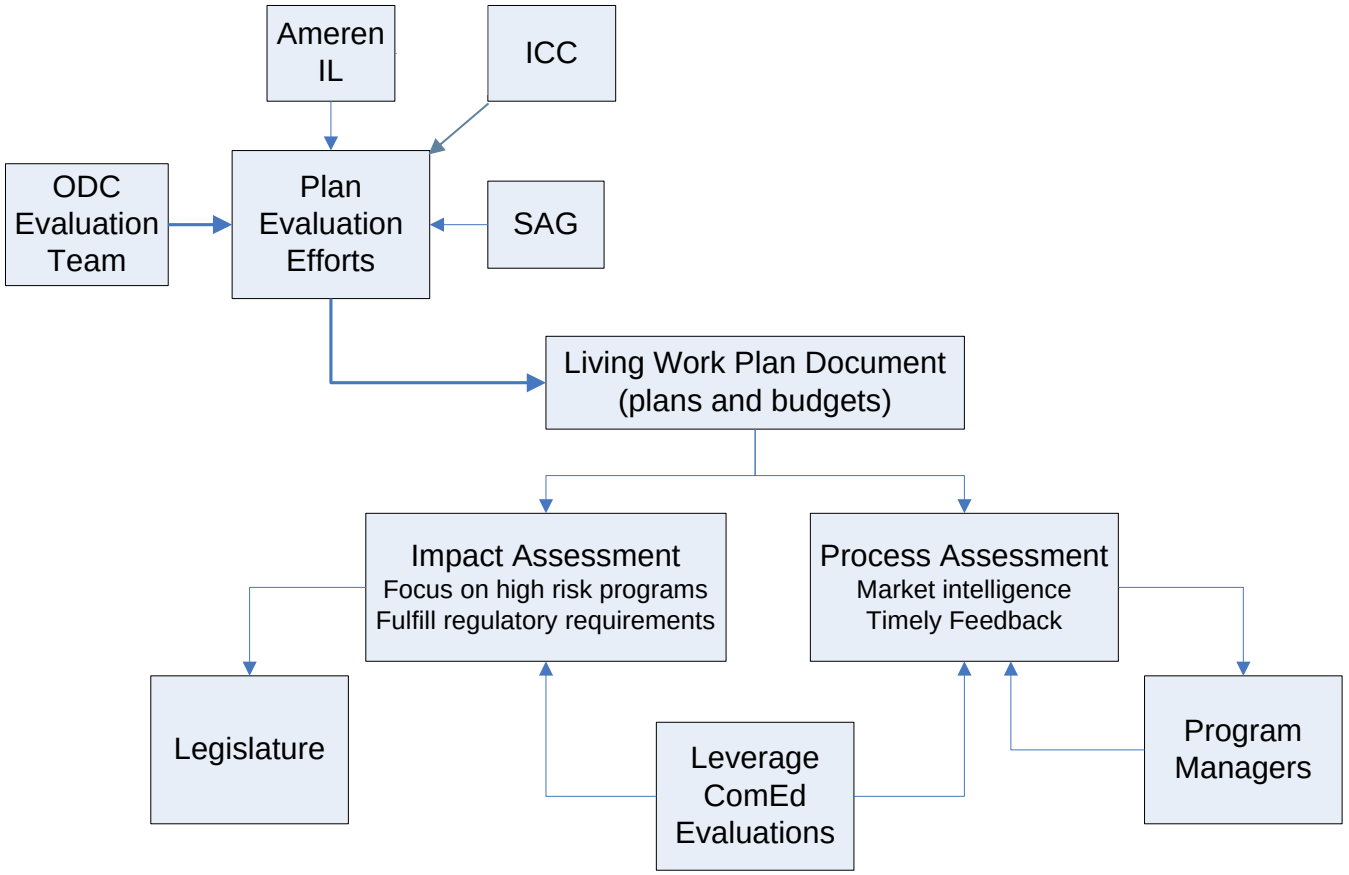
Overview of Presentation

- Overview of evaluation approach
  - Coordination of evaluation efforts
- Allocation of EM&V resources
- Evaluation approach by program
  - Extent of Process and Impact Evaluation Effort
- Schedule of evaluation activities

Overview of Evaluation Approach



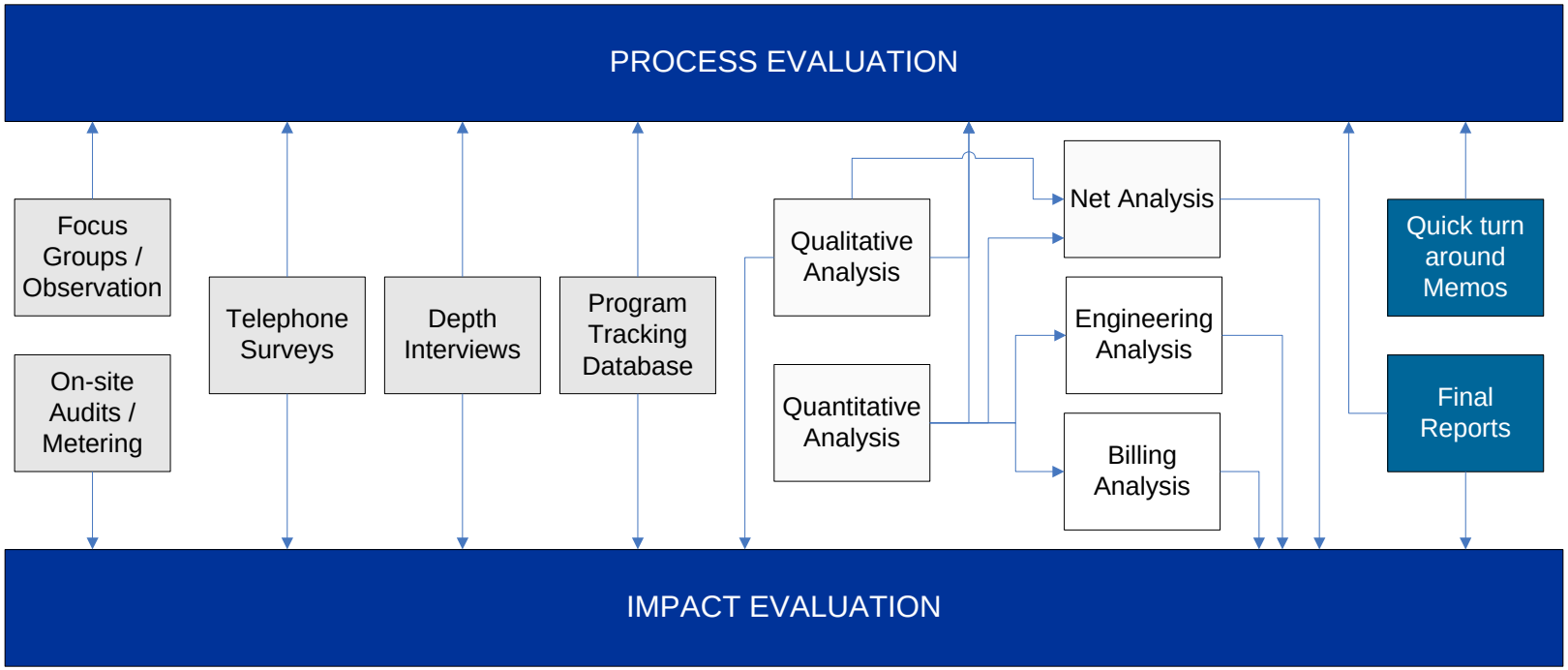
Overview of Evaluation Approach: Coordination of Evaluation Efforts

- Our team is leading the evaluation of the portfolio of ComEd and DCEO programs with Summit Blue as prime
- The program and cross cutting topic leads are the same for both projects which will ensure close coordination
- Leverage evaluation efforts (e.g. planning efforts, methodologies, research instruments) to ensure coordination of evaluation while addressing evaluation priorities for each portfolio

Allocation of EM&V Resources

- Prioritization of evaluation efforts and allocation of resources across portfolio of programs based on
  - The risk individual program pose to realizing portfolio savings goals (i.e. programs with greatest expected impacts pose greatest risk)
  - The extent to which evaluation has inherent uncertainties that might require more resources
  - Timing of program launch/status of program implementation
- Based on current understanding of program budgets and energy and demand savings goals, we propose to allocate the greatest share of EM&V resources to the C&I Prescriptive and Custom programs
  - Together account for more than 90% of projected portfolio energy impacts and more than 75% of demand impacts; 86% of implementation budget
  - PY1 Street Lighting program has been deferred, Commercial Demand Credit program has been scaled back
- Evaluation priorities might shift with changes in program designs or implementation schedules or as a result of additional information gathered through evaluation effort

Evaluation Approach: Overview of Evaluation Process



Data Collection in General

- Comprehensive approach to ensure we are obtaining the data required for evaluation and that we can determine if the program implementation is consistent with program design
- Sampling developed for each program by end use, measure or technology group, guided by evaluation framework protocols

Data Collection – Impact Specific

- Systematic application of IPMVP protocols for both data collection and analysis methods
- Four levels of field data collection
    1) Verification inspections
    2) Inspections with spot measurements
    3) Runtime hour data logging studies
    4) End-use metering data collection

Data Collection – Process Specific

- Initial in-depth interviews with program staff and implementers for all programs followed by ongoing communication
- Rapid start effort conducted in a phased manner to communicate market intelligence and actionable feedback in near-real time
- Results to support continuous program improvement
- Benchmarking against program-specific best-practices using the results of the National Energy Efficiency Best Practices study

Available Analytic Approaches: Evaluation "tool-box"

- Gross Program Savings Methods:
  - End-Use Monitoring, Calibrated Building Simulation Models, Engineering Review, Billing Analysis and Representative Day and Statistical Approaches to Estimate Demand-Response Impacts.
- Net Effects Methods:
  - Self Report Analysis and Net Billing Analysis/Statistically Adjusted Engineering Analysis.
- Process Methods:
  - Depth Interviews with program managers and implementation contractors, market actor interviews and/or focus groups, quantitative surveys, in-field observations/intercepts.

Commercial Program Review

Gross Impact Methods

	End-Use Monitoring	Calibrated Building Simulation Models	On-site Calibrated Engineering Analysis	Engineering Review	Billing Analysis	Representative Day Approach (DR)	Multivariate Statistical Methods (DR)
C&I Prescriptive	X	X	X	X	X		
C&I Retro-Commissioning	X		X	X			
Commercial New Construction		X	X				
C&I Custom	X		X	X			
Street Light Replacement				X			
Commercial Demand Credit						X	X

Program Specific Approach: C&I Prescriptive

- **Overview**
  - *How well does the program work? What can we improve?*
    - Comprehensive review of program marketing and outreach materials
    - Assessment of program efforts to recruit trade allies and customers
    - Assessment of potential barriers to program participation
  - *What are the energy impacts of the program?*
    - Focus on verification of assumptions used in the stipulated impact formulas
- **Data Sources**
  - Quantitative survey (i.e. telephone survey) of program participants to gather information useful process information as well as a battery of questions for estimating free-ridership (possibly) and spillover.
  - Depth interviews with program staff and trade allies
  - Project-level tracking data, stipulated savings algorithms and assumptions documented in TRM
  - Limited end-use metering and on-site audits will be used to verify measure installations and as-installed operating conditions

Program Specific Approach: C&I Prescriptive

- **Data Analysis**
  - Quantitative
    - Program satisfaction and effectiveness as viewed by customers
    - Verify tracking data, assumptions, spillover
    - Billing Analysis for net energy impacts for measures with sufficient savings and where signal-to-noise ratio considered high enough to discern impact if present (self-report method used if this not a viable method)
  - Qualitative
    - Program effectiveness as viewed by program staff and trade allies

Program Specific Approach: C&I Custom

- **Overview:**
  - *How well does the program work? What can we improve?*
    - Comprehensive review of program marketing and outreach materials
    - Assessment of program efforts to recruit customers
    - Assessment of potential barriers to program participation
  - *What are the energy impacts of the program?*
    - Rely primarily on telephone interviews and limited site-specific measurement and verification
    - Apply individual customer pre- and post-retrofit analysis as deemed appropriate
- **Data Sources:**
  - Project-level tracking data, hard copy reports, algorithms and assumptions used to derive energy and demand savings
  - Data gathered during telephone interviews and a limited number of on-site audits to verify baseline and installed operating conditions.
  - If resources permit, post-metering will be applied in cases where it is difficult to accurately estimate savings using other methods

Program Specific Approach: C&I Custom

- **Data Analysis**
  - Quantitative
    - Program satisfaction and effectiveness as viewed by customers
    - If applying metering or site specific analysis, methodologies will be based on IPMVP protocols:
      1. Review application forms and develop site-specific analysis plans and data collection plans, targeted to gather missing information or verify application information.
      2. Perform telephone interview or on-site audit for verification and measurement. Calculate site-level impact evaluation of the energy and demand savings.
      3. Extrapolate to the program population using a ratio estimation method.
    - Self-report net method

Program Specific Approach: C&I Custom

- **Data Analysis**
  - Qualitative
    - Program effectiveness as viewed by program staff and trade allies
    - In-depth case studies of a small sample of early participants to thoroughly document and report stakeholder perceptions of the projects from application to payment of incentives

Program Specific Approach: Commercial Demand Credit

- **Overview:**
  - *How well does the program work? What can we improve?*
    - Assessment of program efforts to recruit customers
    - Assessment of potential barriers to program participation
    - Customer satisfaction and view of program effectiveness
  - *What are the energy impacts of the program?*
    - Develop estimates of the peak load reductions based on a Representative Day approach applied to interval meter billing data and program event specific data available from program tracking systems
- **Data Sources:**
  - Interval meter billing data, program specific event data, weather data, and participation data
  - Participant and nonparticipant survey
  - Program staff

Program Specific Approach: Commercial Demand Credit

- **Data Analysis**
  - Quantitative
    - Representative Day Approach. (A second analysis could be performed using a multivariate statistical model to determine individual customers' event responses.)
    - Nonparticipant survey for participant barriers
    - Evaluation of the customer outreach and recruitment effort, customer satisfaction
  - Qualitative
    - Program effectiveness as viewed by program staff

Program Specific Approach: C&I Retro-Commissioning

- **Overview:**
  - *How well does the program work? What can we improve?*
    - Comprehensive review of program marketing and outreach materials
    - Assessment of program efforts to recruit trade allies and customers
    - Assessment of potential barriers to program participation
  - *What are the energy impacts of the program?*
    - Site-specific measurement and verification

- **Data Sources:**
  - Ex ante savings estimates, savings calculations, and supporting data for all implemented system changes for each sampled project from program records
  - On-site audits will be used to verify baseline and current operating conditions
  - Participant survey
  - Trade ally interviews

Program Specific Approach: C&I Retro-Commissioning

- **Data Analysis**
  - Quantitative
    - Method determined on a case-by-case basis. Probable verification only for all measures.
    - Possible detailed engineering analysis using short term metering results to assess savings for more significant changes.
    - Site-specific evaluation results extrapolated to the program population using a ratio estimation method.
    - Self-report net method.
  - Qualitative
    - Interviews with program staff, implementation contractor and market actors
    - Review of program materials to assess trade ally outreach and training efforts

Program Specific Approach: Commercial New Construction

- **Overview:**
  - *How well does the program work? What can we improve?*
    - Comprehensive review of program marketing and outreach materials
    - Assessment of program efforts to recruit trade allies and customers
    - Assessment of potential barriers to program participation
  - *What are the energy impacts of the program?*
    - Site-specific verification OR
    - Site-specific M&V combined with calibrated building simulation modeling OR
    - Compare and analyze as-built conditions with baseline conditions constructed based on a combination of code-compliance and self-reported information for small sample of projects.
- **Data Sources:**
  - Project-level design documents and modeling results, applicable state and local building codes, and data gathered during on-site audits.
  - Program staff, implementer, design professionals, trade allies, customers

Program Specific Approach: Commercial New Construction

- **Data Analysis:**
  - Quantitative
    - Use building simulation models and other engineering models to compare the energy use resulting from as-built conditions with evaluated baseline conditions
    - Self-report net method
  - Qualitative
    - Initial emphasis on an assessment of program outreach strategies based on in-depth interviews with program staff, the implementation contractor, and design professionals
    - As program matures - Interviews with participating and non-participating trade allies

Program Specific Approach: Street Lighting

- **Overview:**
  - *How well does the program work? What can we improve?*
    - Comprehensive review of program marketing and outreach materials
    - Assessment of program efforts to recruit customers
    - Assessment of potential barriers to program participation
  - *What are the energy impacts of the program?*
    - Review the appropriateness and accuracy of the key inputs and assumptions (e.g. hours of operation, EUL).
- **Data Sources:**
  - Interviews with program staff.
  - Data recorded in program tracking database and project files.
  - Savings algorithms and sources for key program assumptions.

Program Specific Approach: Street Lighting

- **Data Analysis:**
  - Quantitative
    - Engineering review of savings algorithms.
    - Re-calculate program impacts based on recommended changes and calculate a realization rate on the program-estimated savings.
    - If participation warrants, we will include a participant survey effort to gather process evaluation and site specific information necessary to support the impact evaluation
    - Self-report net method
  - Qualitative
    - A scaled down effort is proposed for this program to include interviews with the program manager and implementation contractor and an assessment of program outreach efforts

Schedule of Evaluation Activities

Activity	Due Date
Project Initiation Meeting	February 4th
Final Evaluation Plans	April 13th
Outline of QA/QC Procedures	April 13th
Tracking Data Review	8 weeks after receipt of Tracking Systems (ongoing review)
Impact and Process Evaluation Activities	February 2009 – August 2011
Reporting Schedule	
Quarterly Reports	Ongoing
PY1 Annual Report	September 2009
PY2 Annual Report	September 2010
PY3 Annual Report	September 2011
Final Report/Presentation	February 2012