

TRIAD M&V TOOL.

CONCLUSIVE AND VERIFIED ENERGY SAVINGS

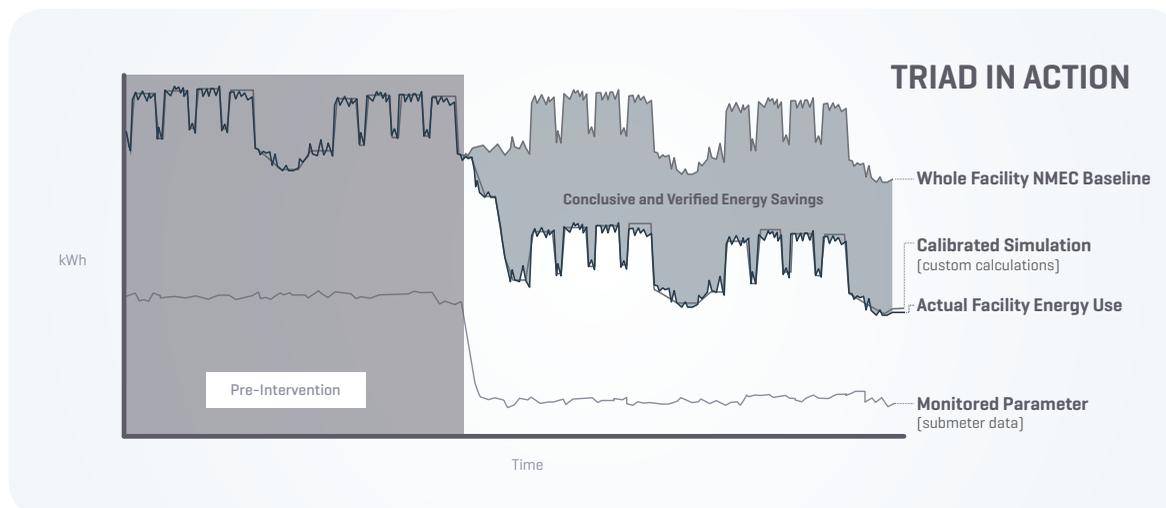
Triad is built on the premise that utilizing multiple validation pathways will result in optimally accurate results. The approach merges industry standard methodologies to deliver defensible and decisive measurements of energy savings.

1 IPMVP Option C
Normalized Metered Energy Consumption [NMEC] whole facility data

2 IPMVP Option D
Calibrated simulation via fundamental engineering energy calculations

3 IPMVP Option A/B
Monitored all key parameter measurements

The divergence between the streams is used to readily identify Non-Routine Events [NREs], that are then accounted for in the analysis. The convergence of the streams signifies a validated impact of the interventions.



*Measurement and Verification [M&V]; International Performance Measurement and Verification Protocol [IPMVP]

Performance-based programs require robust energy modeling techniques, accurate baseline development methodologies, precise data, and clear and transparent energy monitoring. Program tools must follow industry standards such as ASHRAE Guideline 14 and IPMVP. AESC works within these parameters daily in support of utility DSM programs, and has developed Triad to streamline and fortify our engineering.





IMPORTANT CONSIDERATIONS

- **Accounting for limitations of NMEC** — Although NMEC methodologies are becoming more widely accepted, it has its limitations. Triad streamlines the inclusion of comparison data to shore up the analysis.
- **Clear attribution of savings** — Triad enables investigation of ill-defined NREs, to derive measure-level savings and cost effectiveness.
- **Data disaggregation** — Triad enables an understanding of the contextual relationship between end uses and the focused study of individual data streams.
- **Real-time monitoring** — The approach allows for continual monitoring of systems and detection, and diagnosis, of system performance issues.

TRIAD IS BUILT ON PRAXIS

Triad is built on Praxis, AESC's web-based software platform. Triad integrates with the other Praxis tools such as whole-building modeling, data analytics, reporting, facility scoping, and customer engagement.

Triad's NMEC modeling and calibrated simulations are performed within Praxis. Submeter data can be incorporated various ways including realtime updates from a customer's BMS, through APIs, or wireless sensors.



ABOUT AESC

Alternative Energy Systems Consulting, Inc. [AESC] is an energy engineering practice that drives solutions in energy efficiency, renewable energy, and software. AESC combines technical excellence, Integrated Demand Side Management experience, and a broad skillset to provide a complete suite of engineering and management services. We pride ourselves on supporting our employees and empowering them to deliver superior technical solutions to our customers.

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