

*Reward Your Clients
for
Your Good Work*

Layne McWilliams

*Water/Wastewater Sector Specialist
Energy Smart Industrial Program*

OrACWA Consultant's Breakfast
September 18, 2012



Chad Reed →



After grabbing the lead to (2), Reed takes flight during



Don't be that guy...

What's the big deal?

- Water/Wastewater sourcing, treatment, distribution, collection, conveyance, treatment, and disposal accounts for about 3% of the nation's energy consumption.
- BPA capacity is becoming constrained, and conservation is the lowest cost resource.
- “Tiered” rate structures are here – so local utilities (BPA's customers) want to keep their base allocation open to attract new customers and allow for growth.

Why should you care?

- Regionally, electric rates are heading up. Have they ever gone down?
- Electrical costs associated with pumping and treatment is often the highest non-labor cost for a municipality – and one of the few costs that can be reduced without impacting water quality.
- The lifetime costs of most equipment is incredibly dependent on its efficiency. (Pumps~ 70-80% of lifetime cost is in O&M)
- Systems are designed for 20 year predicted flows and built by low bid project delivery methods.
 - Chances are you're running at less than best efficient point on much of your equipment.
 - Often that means equipment is working harder than it needs to.
- The SRF program gives points for “green” attributes, and energy projects qualify.

A sense of scale can be helpful . . .

A 10 hp motor, at full load, running 24/7, consumes about 65,000 kWh annually = \$4800 / year at 7.5 cents/kWh.

A 200 hp motor consumes about 1.3 million kWh annually, or ~\$100,000 / year.

A 5 kW heater consumes around 50 kWh per day if it's running 10 – 12 hours per day = \$3.75 / day.

A 60W light bulb consumes 1.44 kWh / day, or 11 cents.

What's in it for your clients?

- Significant incentive rates
 - Depends on utility, but generally 18-25 cents per kWh saved based on first year's energy savings
 - So, if we can take an aeration system pulling on average 25 hp down to 15 hp, we're talking about \$12,000 - \$16,000.

- Normally free assistance in identifying potential projects, shepherding projects through the system, and performing measurement and verification on the installed measures.

The ESI Program

ESI Utilities Within Oregon

OREGON

Ashland, City of
Bandon, City of
Blachly-Lane County Coop Elec Assn
Canby Utility Board
Central Electric Cooperative
Central Lincoln PUD
Clatskanie PUD
Columbia Basin Electric Cooperative
Columbia Power Coop Association
Columbia River PUD
Consumers Power Inc
Coos-Curry Electric Cooperative
Douglas Electric Cooperative
Emerald PUD
Eugene Water & Electric Board
Forest Grove Light & Power
Hood River Electric Cooperative
Lane Electric Coop
McMinnville Water & Light
Midstate Electric Cooperative
Milton-Freewater City Light & Power
Northern Wasco County PUD
Oregon Trail Electric
Salem Electric
Springfield Utility Board
Tillamook PUD
Umatilla Electric Coop
Umpqua Indian Utility Cooperative
Wasco Electric Cooperative
West Oregon Electric Coop

OREGON STATE

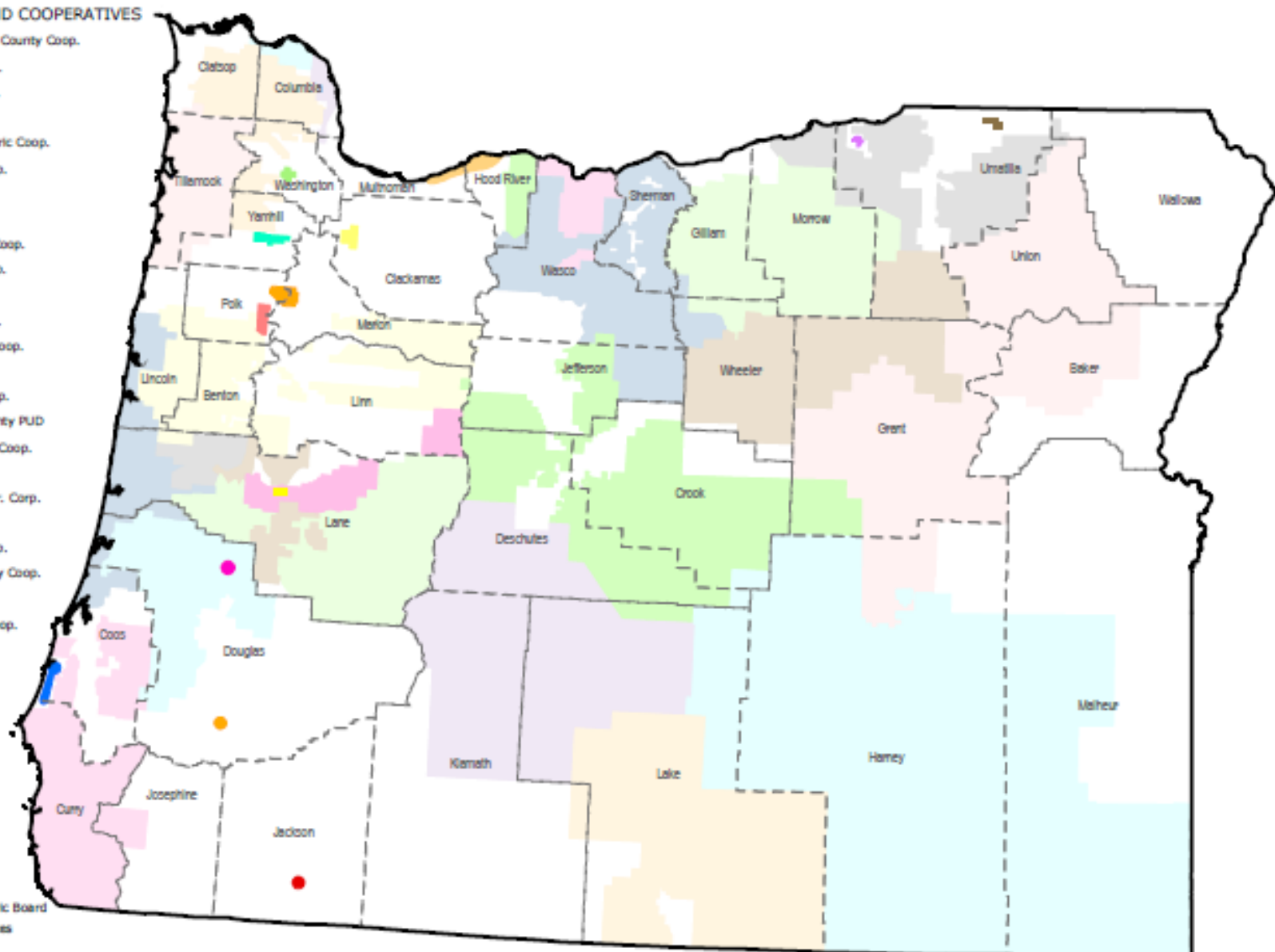
PUBLIC UTILITIES, COOPERATIVES AND MUNICIPALITIES

PUBLIC UTILITIES AND COOPERATIVES

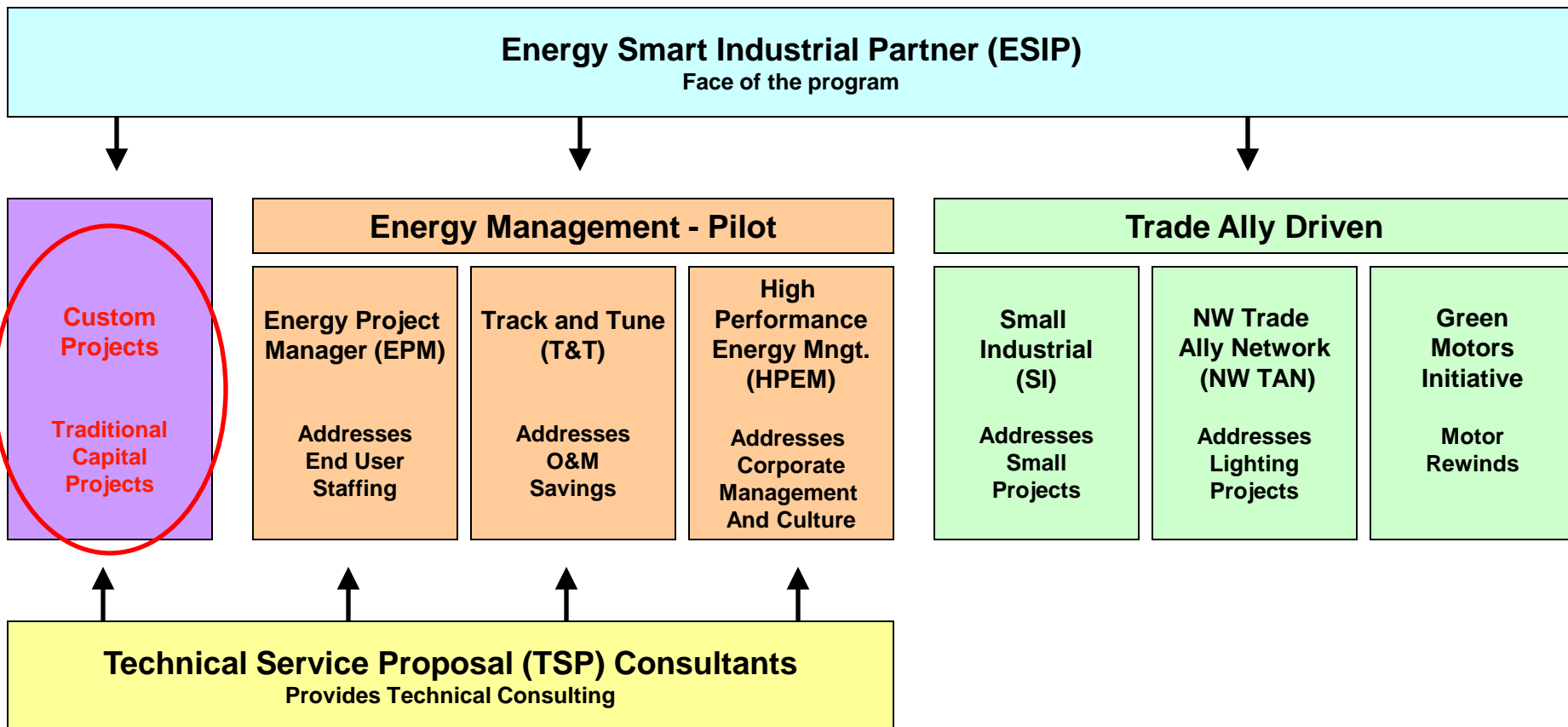
- Bladly-Lane Electric County Coop.
- Central Electric Coop.
- Central Lincoln Coop.
- Clatskanie PUD
- Columbia Basin Electric Coop.
- Columbia Power Coop.
- Columbia River PUD
- Consumers Power
- Coos-Curry Electric Coop.
- Douglas Electric Coop.
- Emerald PUD
- Harney Electric Coop.
- Hood River Electric Coop.
- Lane Electric Coop.
- Midstate Electric Coop.
- Northern Wasco County PUD
- Oregon Trail Electric Coop.
- Salem Electric
- Surprise Valley Electr. Corp.
- Tillamook PUD
- Umatilla Electric Coop.
- Umpqua Indian Utility Coop.
- Wasco Electric Coop.
- W Oregon Electric Coop.

MUNICIPALITIES

- Carby Utility Board
- City of Ashland
- City of Bandon
- City of Cascade Locks
- City of Drain
- City of Forest Grove
- City of McMinnville
- City of Milton-Freewater
- City of Monmouth
- Eugene Water and Electric Board
- Hermiston Energy Services
- Springfield Utility Board



Energy Smart Industrial Program Components



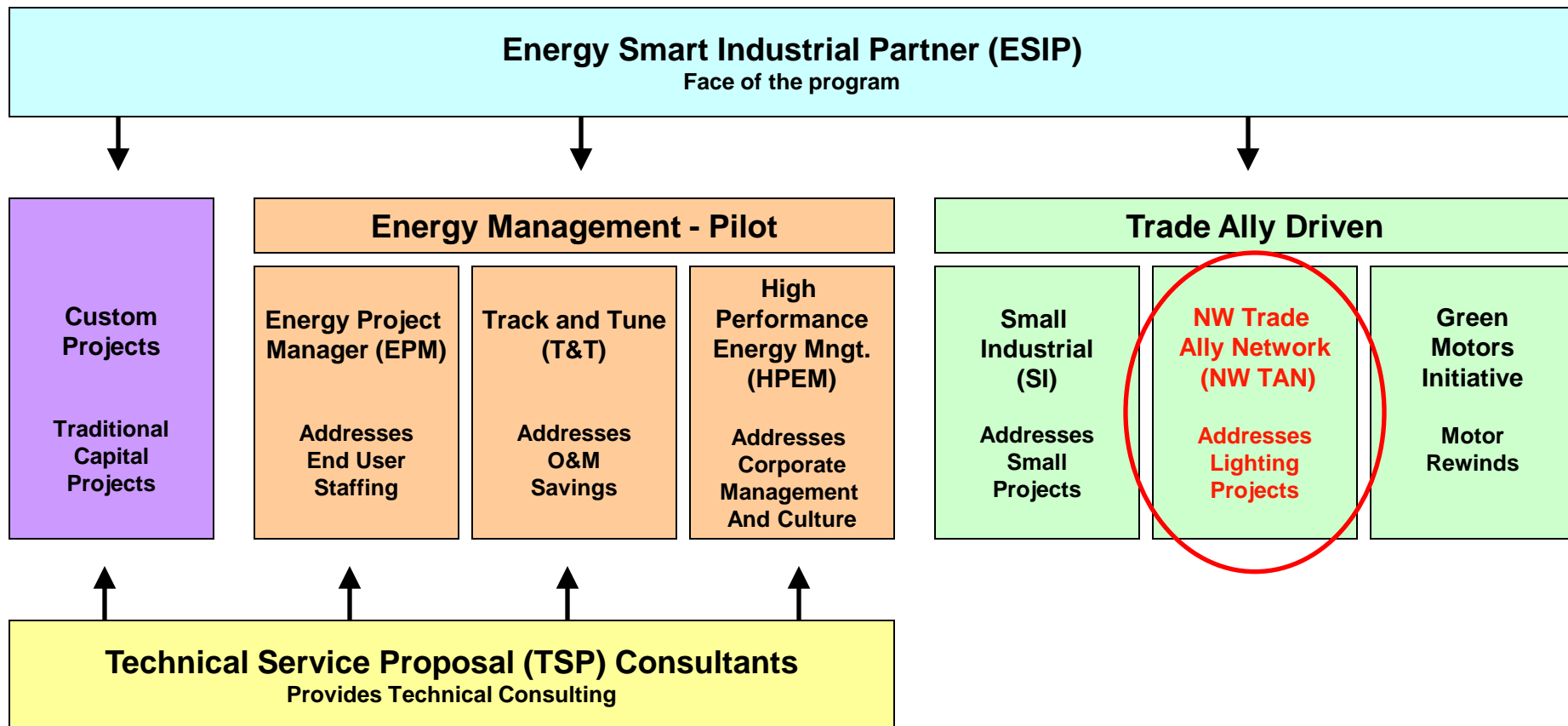
Custom Projects

- Incentives for traditional capital projects.

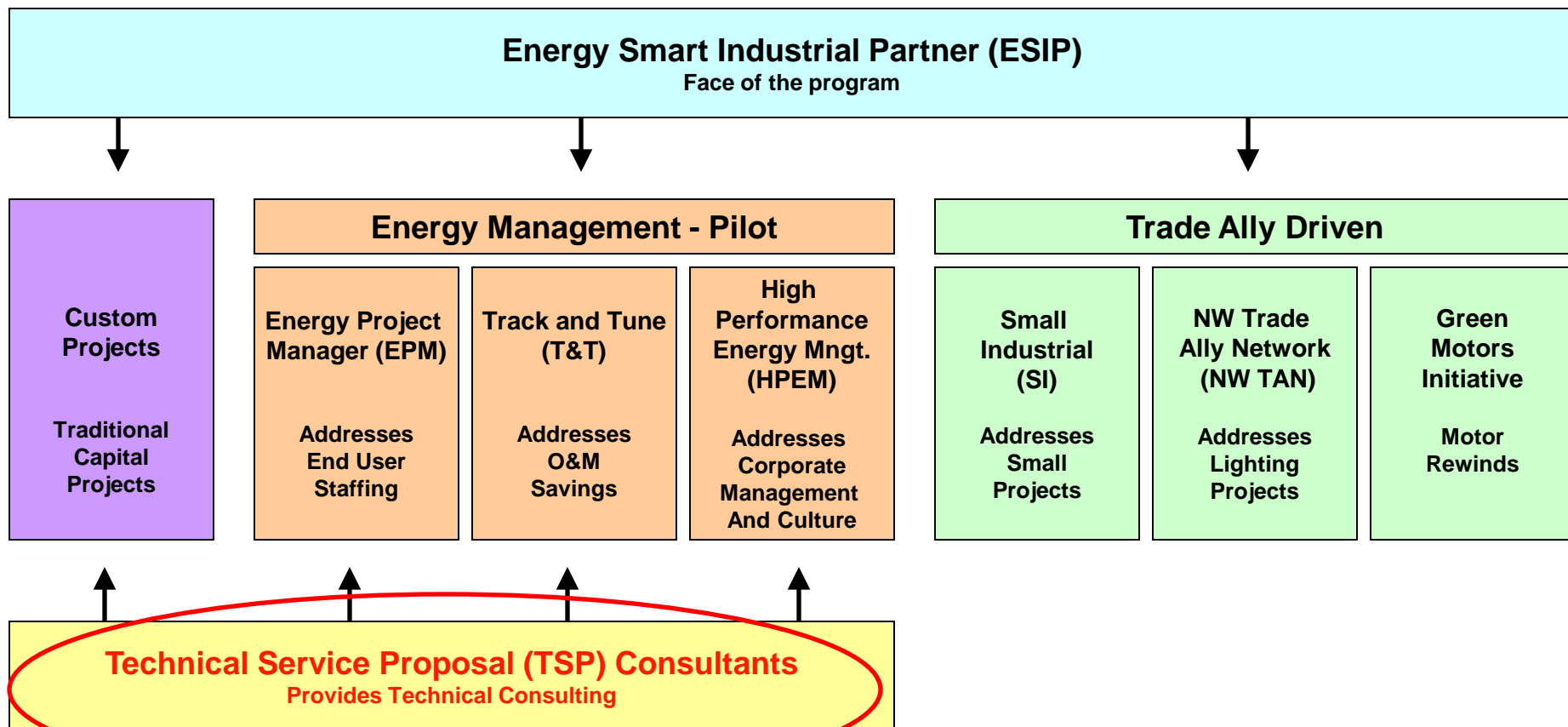
- Pumps
- Fans
- Compressed Air
- Refrigeration
- Lighting
- Motors
- Variable Frequency Drives
- Control Upgrades
- Process Upgrades

- Depending upon utility, but up to \$0.25 per kWh saved in first year.
- Capped at 50 to 70% of project cost (again, depending)
 - You get the lesser of 25 cents / kWh OR 70% of project cost.
 - Project cost can include design fees, and can be incremental cost between “baseline” and “efficient” equipment for new construction
- Paid based on Measured and Verified (M&V) savings.
 - The payment comes after the project is complete, so capital funds still needed upfront to cover the project.

Energy Smart Industrial Program Components



Energy Smart Industrial Program Components



ESI TSP Services

- A pool of BPA pre-approved technical consultants
- Available for:
 - Scoping Assessment
 - Project Assessment
 - M&V and completion reports
 - Track and Tune projects
 - Custom consulting
- Three levels of service:
 - **Level 1:** TSP time and materials (T&M) budget not-to-exceed (NTE) \$2,500
 - **Level 2:** TSP time and materials (T&M) budget not-to-exceed (NTE) \$5,000
 - **Level 3:** Custom TSP budget based on BPA's approval of a fixed-fee proposal submitted by the TSP

Things to keep in mind . . .

aka – The Rules.

- Incentives are rebates, not grants.
 - Payment is made only after the project is complete, the M&V period is complete, and the Completion Report is accepted.

- Incentives are generally not fixed; the amount depends upon actual kWh saved.

- Except for rare, special circumstances (to be discussed soon), project costs cannot be incurred until a Project Proposal is submitted and approved.
 - This is the contract between BPA and the local utility that guarantees payment for measured and verified savings.

- There is no minimum or maximum project size.
- The program is “agnostic” as to technology, vendor, other funding sources, use of the incentive money, etc.
- If the more efficient alternative costs less initially, there is no rebate.
- We can “bundle” multiple measures to help avoid leaving incentive money on the table.
- A project that has a simple payback of 6 months or less before incentives does not qualify for incentives.

The most common – and frustrating – tripping point is calling us too late to take advantage of the program.

A few more guidelines to keep in mind.

- For retrofits, we look at what is installed now as the baseline.
 - The cost of the retrofit is the project cost.
 - The *actual* post-project energy usage vs. *actual* pre-project energy usage is the basis for savings.
 - If existing equipment is at the end of life, then we are closer to “new construction” mode.

A few more guidelines to keep in mind.

- For new construction, we look at the difference between a “baseline” approach and a more energy efficient approach.
 - The savings is the difference between *estimated* baseline usage and actual, post-project energy efficient installation usage.
 - The project cost to be incentivized is the difference in cost between baseline and the more efficient alternative.
 - For end of life equipment, baseline can be replacement with identical equipment, if still available and viable.

How can we best utilize the program for our client's benefit?

First Steps -

- Call the local power utility and ask if conservation incentives are available for water and wastewater infrastructure.
 - In Washington, Oregon, ID, western MT, *for public utilities (i.e. coops, PUDs, municipal light department)*, contact me.
 - In Oregon, for investor-owned utilities, contact the Energy Trust of Oregon (ETO).
 - In Washington and Idaho, for investor-owned utilities, contact their industrial conservation engineers
- When?
 - As soon as possible . . .

- Early is better for several reasons:
 - The CIP timing might be impacted by incentives.
 - During pre-design, “big picture” ideas are batted around and thrown out or kept in play – incentives can impact those decisions.
 - By 30%, the process (and most of the process equipment) has been selected.
 - If you move forward knowing what paperwork will be required for the incentives, you can efficiently collect and store it for submission / support.
 - Feasibility studies can be included if a project results, but only if we obtain permission to include those costs up front.
 - If practical, bid options can be utilized for different equipment or processes. This creates the “baseline” and “alternate” cost estimate automatically.

- Help the programs help you:
 - For new construction, “baseline” can be difficult to define, unless there are code issues (e.g. Washington Energy Code and new rules for Premium Efficiency motors), so you can help define that.
 - Perform or obtain “place holder” estimates for equipment and features that could have been, but aren’t, included in the project.
 - These help form the “baseline” cost estimate.

- Help the program help you:
 - Write specs or bid forms to make it easy to collect actual cost information.
 - Call as often as you want / need / must to ask questions and get clarification; we are here to help make the process as easy as possible.
 - Be open-minded, and encourage your project team to take a fresh look at everything.

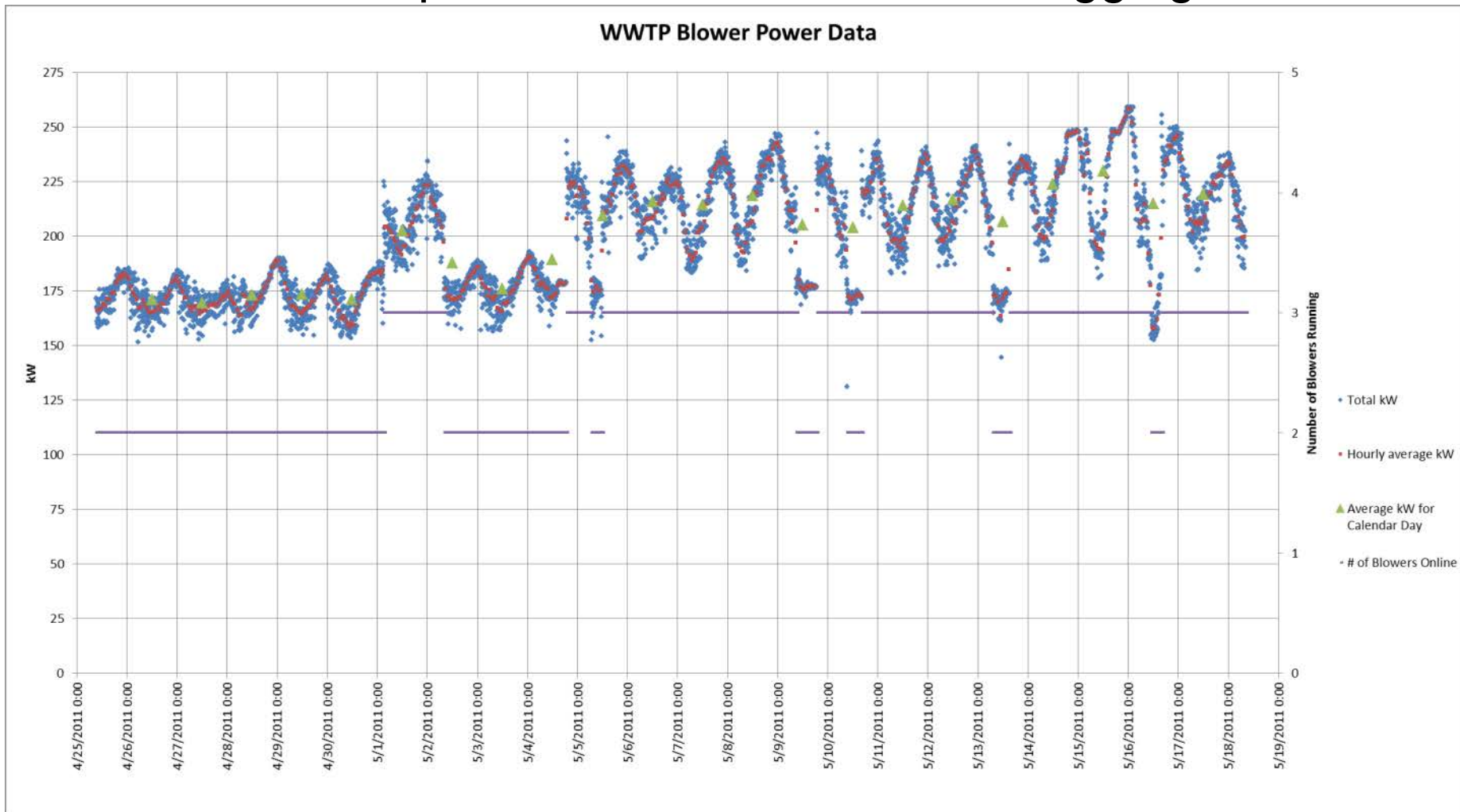
Project Documentation

- Requirements depend on scale and complexity of project.
 - The overall program costs are impacted by the “overhead” costs of scoping, data analysis, and M&V.
 - Many plants have really good SCADA systems with relatively poor reporting / data mining experience.
- New construction is generally M&V'd by comparing the actual plant performance (once constructed) to a model of the plant that wasn't built.
 - The energy calcs are often easier than gathering the cost data.

Project Documentation

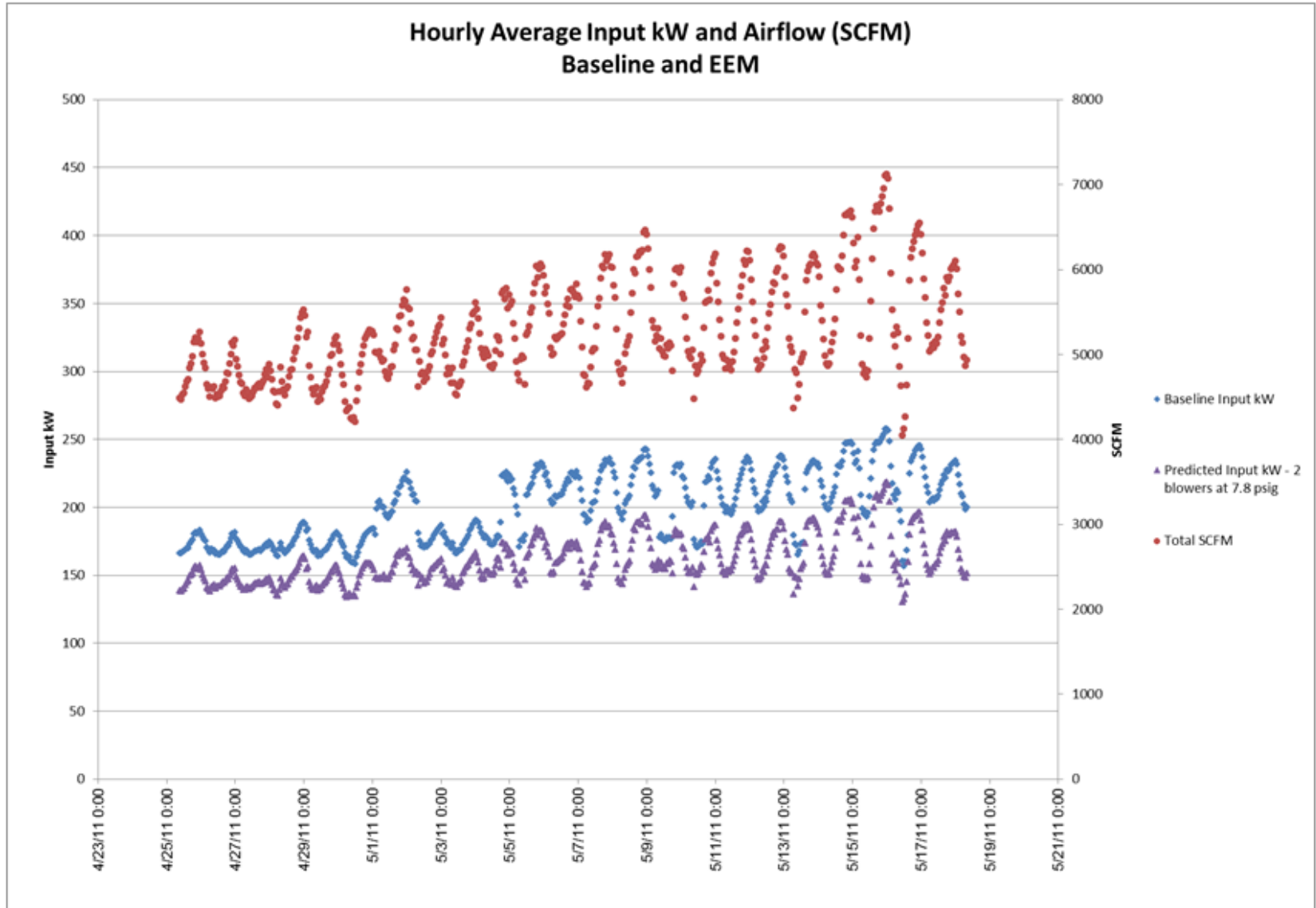
- ESI program will complete energy estimates and draft the CPP
 - Engineer / Contractor help is welcome and usually required
- Once CPP is approved and project is complete, ESI program will complete the M&V
 - “M&V Light” = Spot checks + sound engineering calcs
 - Full M&V can range from a couple weeks to several months of energy monitoring.
 - If monitoring equipment is part of plant, we can use that system in lieu of separate loggers.

Example of Robust, Short Term Logging

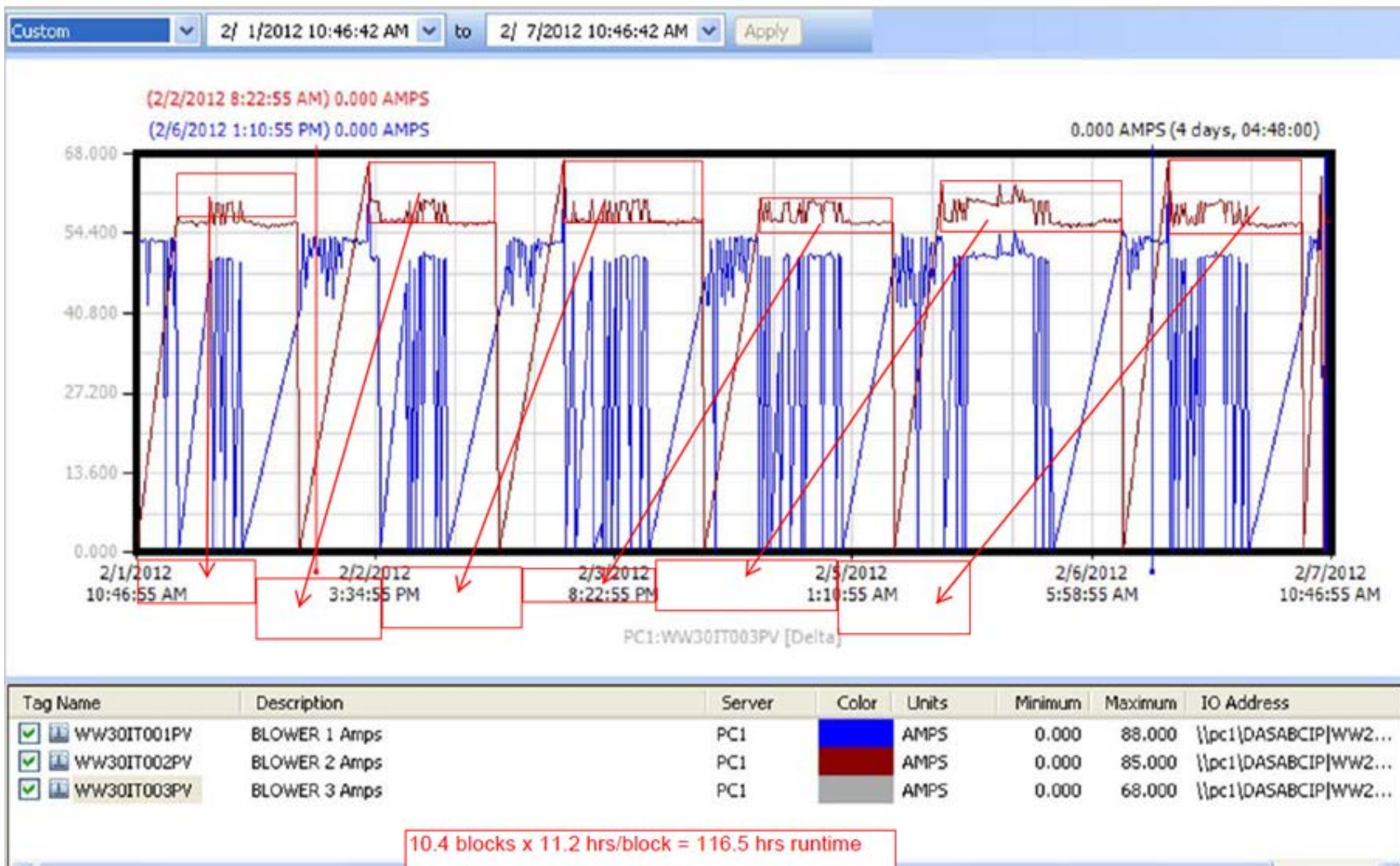


Resulting EEM Analysis

Figure 8: Model Results for Airflow, Baseline, and Predicted Blower kW



Being flexible helps . . .



Things to Remember

- DON'T BUY EQUIPMENT UNTIL THE CPP IS APPROVED!
- We'll need to collect the project cost data, so if it can be gathered and organized during the project, it saves everyone time.
- We are here to help, so please just call or email.

Contact Information

IF YOUR CLIENT IS A BPA CUSTOMER (Co-op, Municipal):

Layne McWilliams

971-244-8581

layne.mcwilliams@energysmartindustrial.com

IF YOUR CLIENT IS AN IOU CUSTOMER:

Ray Hawksley

503-445-2941

ray.hawksley@energytrust.org