

**EO Collaborative  
Evaluation Workgroup Agenda  
January 19, 2010, 1:00 – 5:00 p.m.**

**NOTES:**

**Presentation by Cadmus Group, Inc.'s  
Sami Khawaja, Ph.D.**

GOAL: Deliver the best EO programs possible. We can give early signals if something is deviating from the right path.

**What is DSM?**

Slide 6-7: The old world demand side and supply side did not communicate. In today's world they now communicate. Energy Conservation is being called the "5<sup>th</sup> fuel".

Slide 8 Daily Load Profile: There is an obligation to serve on the demand side. Electricity cannot be stored, this creates a big problem. This is a profile of one day from when a person wakes up in the morning to when they go to sleep at night. Demand is one period – it changes at every point of the day. Consumers pay for the area under the line – in KWh. The system has to produce a reserve in case everyone would choose to do everything at once (this is the think Generation Line at the top of the graph. So everything from the generation line to the curved line is basically lost. So we need to find a way to minimize this lost energy.

Slide 9: Is this a good flow? No

Slide 10: This is a predictable reliable load shape.

Slide 11: Horrible load shape

Slide 14: DMS is simply manipulation of load shape. We want the load factor to be high, which is a good thing. Change load shape by lowering it or flattening it.

Slide 18: At what KWh levels are they peaking at. Only 1% of the time they are at 7,600MW – but yet we have to produce at that level because we have to have reserves. This is the only industry where the company is paying their customers not to use their product.

**Program Planning & Design:**

Slide 23: Each point on this line is a technology (CFL bulbs, etc.) Each measure has to carry itself and then we start bringing in programs, and the question is where do you draw the cost effectiveness line? This is more of a policy decision instead of an economic decision.

**DSM Economics:**

Slide 32: Usually use a payback period of 2 years. Comes from many years of research and experience that people usually only take things with a 2 year payback.

Slide 33: Net present value has to be positive.

Slide 37: At lower discount rate we are willing to do more today, at higher discount rate it makes anything happen in the future not as valuable today. The MEMD has measure life in them.

Slide 38: TRC: Total Resource Cost Test. RIM: Ratepayer Impact UCT: Utility Cost Test PCT: Participant Cost Test SCT: Societal Cost Test

Slide 46: Here is the outcome from the previous slide of values. Side Note: By statute in Michigan we use the UTC.

Slide 47: Are you allowed to count benefits of a different fuel? In Ohio The Commission would like them to consider the benefits. Some utilities feel like fuel switching isn't fair. It is more of a policy issue instead of an economic issue.

*Question:* Have you done research on ground heat pumps as fuel switching? Yes there has been a lot of research done, and in most cases it turns out to be very cost effective. Especially to go from a gas furnace/AC to heat pump. There are certain conditions where it makes most sense. However it is very case by case and doesn't always make sense. The utility that benefits should be the one to fund the job – not the one that is hurt.

### **Impact Evaluation:**

Slide 51: There are currently 3 guidelines that can be used – all of which Sami was part of creating. California also has their own but it is very complicated. A time for discussion is when they discuss methods and not results. Sami doesn't believe it is right to argue when going over the results; it is too late at that point.

Slide 59: [www.calmac.org](http://www.calmac.org) - There is probably about 900 studies of all kinds of projects. This is a great place for reference and information.

Slide 61: End use metering is the most expensive but also the most accurate.

Slide 62: You need many customers to do this. You need single family, multi family, mixed commercial. If you don't – billing analysis is not the way to go.

Slide 64: This is an example of a house that has been weatherized. This shows that the meter was much lower however, it does not take into account the weather, or did a child move out? Etc.

Slide 65: How to remove the weather factor – use PRISM. Runs a regression model that says energy usage is determined by heating degree days.

Slide 66: Shows that the pre year was a little bit cooler than the post year. There were more days that required heating. Also it was a little bit hotter in the summer in the pre as compared to the post. It was a more extreme year and therefore affected the savings number. All factors need to be considered.

Slide 68: Comparison Group – it is important to exclude (normalize) for factors outside the scope of the program.

Slide 84: Net-to-gross. We have a good grasp on this, we've been doing this for many years.

Adjustment of gross savings: installation – savings are realized the first year the measure is “implemented”. (10 CFLs given, 5 installed, but the utility takes credit for 10 that year. A calendar year is an artificial construct. Measures are meant to be realized over a period of many (i.e., more than 1) year.

Failure rates: if a measure fails, no energy savings are realized and thus no credit given. Baseline assumptions: 3 unknowns: pre/post watts and final savings. What wattage bulb was in that socket before? What power CFL replaced it?

Leakage: non-customers participating in program, i.e., non-utility customers buying subsidized CFLs.

Slide 85: Free Riders

Some would have participated without incentives to varying degrees. He believes it's fair to consider Free Riders, but not so concerned with Spillover.

Slide 86: Can give gross and adjusted number, just cannot dissect it to assign values to free riders, spillover and take-back functions. May want to have 3 or 4 years experience before you deem adjusted numbers.

Slide 88: Would be nice to define terms for a common base of understanding. For instance – “deemed”. To Sami this means a fixed number. If this is not the case, then it should be referred to as “planning estimate” or other term.