



**Emerging Technologies Team
(Part of the Alternative Technologies Workgroup, 21st Century Energy Plan)**

June 14, 2006 Meeting Minutes
Location: NextEnergy Center, Detroit, MI
Time: 1:30 – 3:30 PM

Review of ET Team Objectives previous meeting notes and status of work products

Final draft “Position Statement” for the ET Team has been posted on the 21st CEP web site – Final comments should be directed to Ryan Waddington on any additional changes or clarifications desired for the Position Statement. The Position Statement will be included in the final report developed by the Alternative Technology Workgroup.

Characterization Table Emerging Technologies for advanced or emerging DG technologies has been developed and shared with the group. Tom Stanton has reviewed this document and added a few additional components to the matrix in order to accommodate renewable energy DG technologies.

Realm of various electricity generating technologies to be included into this characterization table were discussed. The existing base of technologies covered will include; Reciprocating engines, Stirling engines; Combustion Gas Turbine; PEM Fuel Cell; Phosphoric acid Fuel Cell; Solid Oxide Fuel Cell; Molten Carbonate Fuel Cell and Micro-turbine technologies, including low-flow turbines (Cryptonic Solutions)

Suggestion was made to add quantity and quality of “Waste Heat Generated (perhaps place under the Waste Heat Temperature section)

Also it was suggested to add an “Annual Availability” section to be added and an “Annual Forced Outage Rate” section as well. O&M plus Planned Forced Outage Rate =? It was noted that this issue may not have bearing on dispatchable DG resources.

Question was made regarding the Load Following Capability unit of measurement and Footnote #5 - Suggestion to change unit measurement to Delta kW/minute or change the section to Y/N for Load Following Operating Range (% minimum) and Delta kW/minute

Issues brought up with respect to Fuel Costs and Levelized Cost section (\$/kWh) Variable Fuel Cost. Issues related to price projections for various fuel types were brought up. All agreed that consistency of source is paramount to good data outcome.

Short Circuit/Inrush Capability issues related to on-site load demands can produce limitations or special technology needs for DG resources. Inrush problems can occur when appliances or devices run creating a problem for the micro grid. Add section entitled “Short Circuit/Inrush” with a Y or N

Add a section on Incentives for Technologies – Financial and Regulatory (both state and federal) Specific financial incentives for focus technologies in Federal Energy Policy Act

NOTE: To the extent that the group can gather data on Life Cycle Costs for these various technologies, then we should gather it. Solid Waste, Water Quality, Air Emissions, etc. were

intended to capture operating costs, and not end-of-life or pre-installed costs. CNF process did not perform Life Cycle Cost analysis.

Questions on Accidents/Vulnerabilities section, should we re-name the section to better represent issues such as security, natural or man-made disasters, human error, etc. Is this something we can capture from Insurance Policies. More thought on whether we need this section included? Perhaps change to "Insurance Risk"?

Overview of the Draft Report Outline was provided and discussion on format and elements to the outline.

PEST Analysis concept? VI – Barriers to Adoption? Change to "Adoption Issues"

Change IV – b. Reliability & Security - change to Reliability, Safety and Compatibility

Action Items

Team assignments for gathering data on individual DG Technologies;

- 1) Fuel Cell Research – Joe Funyak, Ryan Waddington and George Hayden, Dave Ellis
- 2) Reciprocating Engines – Mike Serafin, DTE and ?
- 3) Stirling Engines – Ryan Waddington and Mark Beyer (Peake Marketing)
- 4) SmartGrid Technologies – Tanya Paslawski, Steve Paytash, Jim Beaubien, Steve Kulesia
- 5) Micro-turbines/Combustion Turbines – Mike Serafin, DTE
- 6) Advanced Storage – Gary Westerhelm, CodaSys and United Solar Ovonic
- 7) Reciprocating Engines - Grady Nance
- 8) (Interconnection Issues for DG (white paper) Gerald Wyse, Consumers Energy)

Next Sub-group meeting will be held on Monday, June 26, 2006 @ MPSC offices, Hearing Room C from 10 – noon.