CEWD National Forum
Retraining Employees at DTE Energy

Columbus, Ohio
August, 2010
Executive Overview

- Poor EEI test results by internal and external candidates is a problem for DTE Energy as well as other Utilities
- Candidates lack fundamental knowledge/skill in math, reading, spatial concepts to name a few
- Benchmark Utility companies are developing countermeasures to attack the problem independently, and rely on both internal and external resources to deliver
- Worked with potential partners (community colleges) and have identified curriculum and locations for delivery
- In collaboration with Union and Management actual implementation steps are underway
- Delivery of training scheduled for September 2010
The testing activities that are performed on the job classifications within our current Critical Pipelines show less than a 60% pass rate.

<table>
<thead>
<tr>
<th>Critical Pipelines</th>
<th>CAST</th>
<th>MASS</th>
<th>POSS</th>
<th>SOPD</th>
<th>Pole Climbing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apprentice Splicer</td>
<td>X</td>
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<tr>
<td>Apprentice Lineman</td>
<td>X</td>
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<tr>
<td>Assistant Substation Operator</td>
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<tr>
<td>System Supervisor I</td>
<td></td>
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<td>X</td>
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<tr>
<td>Fuel Supply Operator</td>
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<td>X</td>
<td></td>
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<tr>
<td>Maintenance Journeyman</td>
<td></td>
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<td>X</td>
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<tr>
<td>Instrument &amp; Control Tech A</td>
<td></td>
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<tr>
<td>Power Plant Operator</td>
<td></td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>Nuclear Maintenance Journeyman</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nuclear Operator</td>
<td></td>
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<td>X</td>
<td></td>
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<tr>
<td>Radiation Protection Tech</td>
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<tr>
<td>Sr. Technician Controls</td>
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<tr>
<td>Jr. Gas Controller</td>
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<tr>
<td>Overall Test Pass Rates</td>
<td>51%</td>
<td>56%</td>
<td>45%</td>
<td>59%</td>
<td></td>
</tr>
</tbody>
</table>

**CAST**
- Graphic Arithmetic
- Mathematical Usage
- Mechanical Concepts
- Reading for Comprehension

**MASS**
- Assembly/Spatial Ability
- Mechanical Concepts
- Reading Comprehension
- Mathematical Usage – Short Version
- Background & Opinion Questionnaire

**POSS**
- Assembly/Spatial Ability
- Mechanical Concepts
- Reading Comprehension
- Mathematical Usage – Long Version
- Tables and Graphs

**SOPD**
- Applied Arithmetic Placement
- Electrical Knowledge
- Mathematical Usage
- Numerical Reasoning
- Verbal Reasoning
Benchmark results

We are in the process of benchmarking other Utility companies.

- Electronic surveys distributed to EEI Testing Consortium members (approximately 30 companies) and the Electric Utility HR Metrics Group.
  - 15 companies surveyed have responded to date (submitted Wednesday, April 14th). Companies include: Ameren, Arizona Public Service, Mirant, Progress Energy, IBEW, NRG.

Insights to date:
- Several Utilities are in exploration stage and are providing training support to employees for basic skills (e.g., math, mechanical knowledge, reading comprehension).
- Companies are developing courses in-house to address immediate short-term needs (e.g., automated meter reading), but utilizing community colleges for long-term workforce development needs.

Specifically, other Utilities are advising us that...

- 62% of companies responded they either developed training, or are working with colleges, to address training needs. 46% are currently working with high schools.
- More than 47% of companies surveyed are supporting employee training on all academic competencies (e.g., math, reading, critical thinking, engineering and technology).
- Depending on the specific competency, 20% or more of the companies are training employees on-site.
- 60% of the companies responded that the training initiatives have resulted in a positive impact on employees' performance; the other 40% stated they either don't know, or it's too early to tell.

Union members (students) feedback mechanism

SURVEY SAYS!!!

- 38% response rate to date
- Desire training for all the basic tier 1 skills
- Majority fine with any location; CC campuses IS the least favored
- OK with a variety/mix of deliver options
- Prefer class on weekends and evenings (not before OR immediately after work)
At DTE Energy, we can focus on creating a learning curriculum that enhances skills and abilities in line with the CEWD Competency model.

- DTE has been working with this model to define the skills and competencies for our critical pipelines.

- DTE is working closely with the Michigan Utility Workforce Consortium to identify the community colleges for materials.

- We are focused in the first 3 tiers of this model. Tier 2 in specific shows the largest gap (next slide).

- Depending on volume, this can be delivered internally or within the community college network (close to employee homes and work location).

- The Union has been involved and agrees with development direction.

* Center for Energy Workforce Development: Energy Competency Model, 2008
The alignment with our education partners comes from the details within the CEWD model.

### ACADEMIC COMPETENCIES

1. **Mathematics:** Using mathematics to solve problems
   - Adds, subtracts, multiplies and divides with whole numbers, fractions, decimals and percents; calculates averages, ratios, proportions and rates **CAST, CSR, MASS, POSS, SOPD**
   - Takes measurement of time, temperature, distance, length, width, height, perimeter, etc
   - Correctly converts from one measurement to another **CAST, CSR, MASS, POSS, SOPD**
   - Translates practical problems into useful mathematical expressions and uses appropriate mathematical formulas and techniques **CAST, CSR, MASS, POSS, SOPD, TECH**
   - Solves simple algebraic equations **CAST, CSR, MASS, POSS, SOPD, TECH**
   - Is able to determine slope, midpoint, and distance
   - Calculates perimeters, areas and volumes of basic shapes and solids
   - Reads, tracks, and calculates gauge measurements

2. **Locating, Reading and Using Information:** Knowing how to find information and identifying essential information
   - Sorts through distracting information **CAST, CSR, MASS, POSS**
   - Scans written material for subject of interest **CAST, CSR, MASS, POSS, TECH**
   - Is able to identify main ideas in written material **CAST, MASS, POSS, SOPD, TECH**
   - Correctly interprets written material **CAST, MASS, POSS, SOPD, TECH**
   - Integrates what is learned from written materials with prior knowledge
   - Applies what is learned from the written material to complete specific tasks **CSR**

3. **Writing:** Using standard business English to write messages to co-workers and reports to managers and associates
   - Creates documents such as work orders or memos
   - Uses standard syntax and sentence structure, correct spelling, punctuation and capitalization and appropriate grammar
   - Writes clearly and concisely in a professional and courteous manner
   - Writes effective for a variety of audiences
   - Communicates thoughts, ideas, information which may contain technical material in a logical, organized and coherent manner
   - Clearly develops ideas and elaborates on them with relevant supporting examples and specific details
   - Shows insight, perception and depth in writing

4. **Listening:** Listening carefully in order to incorporate information into work activities
   - Listens carefully to others **CSR**
   - Correctly interprets information provided by others **CSR**
   - Is able to incorporate information into actions

5. **Speaking:** Communicating in spoken English well enough to be understood by supervisors, co-workers and customers
   - Uses standard sentence structure and appropriate grammar **CSR**
   - Speaks clearly, in precise language and in a logical organized and coherent manner **CSR**
   - Keeps language simple and appropriate for the audience’s level of knowledge of the subject **CSR**

6. **Engineering and Technology:** Possessing an appropriate mastery of knowledge, techniques, skills, modern tools and advanced technology
   - Applies basic engineering principles **CAST, MASS, POSS, TECH**
   - Applies the appropriate technical solution **CAST, MASS, POSS, SOPD, TECH, FS**
   - Applies principles of engineering science and technology, techniques, procedures and equipment to the design and production of various goods and services **CAST, MASS, POSS, SOPD, TECH, FS**
   - Applies the basics of electricity **SOPD**
   - Identifies and selects the appropriate hand or small electric tools or diagnostic equipment for the work
   - Solves problems where a variety of mechanical, electrical, thermal or fluid faults could be the reason for the

- **Level 2 “Academic Competencies”** learning objectives that matched our testing results

- This detail was shared with the Consortium community college partners to identify applicable courses
1. Mathematics
   - Using mathematics to calculate averages, ratios, proportions, and rates.
   - Takes note of time, distance, length, width, height, perimeter, and area.
   - Converts from one to another CAST, POSS.
   - Translates practical problems into mathematical expressions and uses appropriate mathematical formulas.
   - Solves CAST, SOPD, TECH.

2. Reading
   - Read and calculates gauge.
   - Locating, reading, knowing how to find information.
   - Identifies distracting information.
   - Scans written subject interest CAST, POSS.
   - Identifies main ideas in written material MASS, POSS, TECH.
   - Interprets written material.
   - Integrates learned from written materials with prior.
   - Applies what from the material to complete specific CSR.

3. Writing
   - English to co-workers and associates.
   - Uses syntax and structure, correct spelling, punctuation, and capitalization.
   - Writes clearly and concisely in a professional, courteous manner.
   - Shows in logical, and organized ideas, which may contain supporting examples.
   - Clearly develops ideas and elaborates them with specific details.

4. Listening
   - Listens to information provided.
   - Incorporates information into work.

5. Speaking
   - Spoken well enough to be understood by supervisors, colleagues, and others.
   - Clearly, in precise and coherent manner.
   -Keeps the subject.

6. Engineering and Technology
   - Applies basic engineering CAST, POSS, TECH, FS.
   - Applies of engineering science equipment to design and production of various and advanced equipment.
   - Solves a variety of fluid problems.
   - Identifies and the appropriate hand tools for the work.

### Learning Objectives

<table>
<thead>
<tr>
<th>Learning Obj.</th>
<th>Class Name</th>
<th>Provider</th>
<th>Delivery Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>Pre Apprentice Math</td>
<td>Mott College</td>
<td>120 SB</td>
<td>?</td>
</tr>
<tr>
<td>Read Comp</td>
<td>Technical Reading</td>
<td>Mott College</td>
<td>120 SB</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>Basic Elec.</td>
<td>Mott College</td>
<td>120 SB</td>
<td></td>
</tr>
<tr>
<td>Mechanical Abilities</td>
<td>Mechanical Comprehension</td>
<td>Mott College</td>
<td>120 SB</td>
<td></td>
</tr>
<tr>
<td>Spatial Principles</td>
<td>Spatial Skills</td>
<td>Mott College</td>
<td>120 SB</td>
<td></td>
</tr>
<tr>
<td>Test Mastery</td>
<td>Test-Taking Techniques</td>
<td>Mott College</td>
<td>120 SB</td>
<td></td>
</tr>
</tbody>
</table>

### Curriculum Map

- The Foundation; Competency Model / EEI Test Data overlay
- Learning Requirements

### Learning Plan

- Student Initiative
- Take EEI Test
- Pass
- Attend
- Enroll

### CC Network Work

- EEI Test Data overlay
Based on our work to date with the community college network, here’s a look at the course match to location

- Our gap analysis indicated what we need the network to deliver
- Existing courses and materials are already available
- The delivery can be done “on location” at DTE or at any community college
- We’re using the same network and philosophy as awarded in our DOE training Grant (FOA 0000152)
- External pipeline/network development is the next step to improve our new hire test results

(Original information. This Network is now superseded by SMC3. See slide #10)

<table>
<thead>
<tr>
<th>Community College</th>
<th>LCC</th>
<th>SC4</th>
<th>HFCC</th>
<th>MCCC</th>
<th>Macomb CC</th>
<th>OCCC</th>
<th>Delta</th>
<th>Alpena CC</th>
<th>Bay CC</th>
<th>KVCC</th>
<th>WCCC</th>
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<tr>
<td>Courses Offered</td>
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</tr>
<tr>
<td>Math</td>
<td>1 ILT, 1 Web</td>
<td>1 ILT</td>
<td>5 ILT, 5 Web</td>
<td>2 Web</td>
<td>1 ILT, 1 Web</td>
<td>6 ILT</td>
<td>2 ILT, 1 Web</td>
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<tr>
<td>Reading</td>
<td>1 ILT</td>
<td>1 ILT</td>
<td>1 ILT, 2 Web</td>
<td>3 Web</td>
<td>1 ILT, 1 Web</td>
<td>2 ILT</td>
<td>2 ILT, 1 Web</td>
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<tr>
<td>Prob. Solv.</td>
<td>1 ILT</td>
<td>3 ILT</td>
<td>3 ILT, 3 Web</td>
<td>2 Web</td>
<td>1 ILT, 1 Web</td>
<td>4 ILT</td>
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<tr>
<td>Spatial Config.</td>
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<td>1 ILT</td>
<td>1 ILT, 2 Web</td>
<td>1 ILT</td>
<td>1 ILT</td>
<td>2 ILT</td>
<td>2 ILT</td>
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<td></td>
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</tr>
<tr>
<td>Mechanical Ability</td>
<td>1 ILT</td>
<td>2 ILT, 1 Web</td>
<td>4 Web</td>
<td>1 ILT</td>
<td>3 ILT</td>
<td>2 ILT</td>
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<tr>
<td>Pre-Apprenticeship Course</td>
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<tr>
<td>CAST Test Prep Course</td>
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<td></td>
<td></td>
<td>1 ILT</td>
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</tbody>
</table>

ILT = Instructor Led Training courses available  
Web = Web Based Training courses available  
LCC = Lansing Community College  
SC4 = St Clair County Community College  
HFCC = Henry Ford Community College  
MCCC = Monroe County Community College  
SC4 = St Clair County Community College  
OCCC = Oakland County Community College  
FVC = Kalamazoo Valley Community College  
Delta = Delta College  
WCCC = Wayne County Community College  
Alpena CC = Alpena Community College

(Original information. This Network is now superseded by SMC3. See slide #10)
• Who are the partners?
  – SMC3 and Mott Community College. Mott CC has a Pre-Apprentice set of courseware that covers all phases of the EEI testing.

• Working with SMC3 and Mott CC to set the ground work for the following:
  – Courses can be delivered on the DTE Campus – 120 SB. Tuesday and Thursday evenings and again on Saturdays. Starting Sept 14, 2010.

• What do we feel the cost is?
  – Under discussion with SMC3 and Mott CC.

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</tbody>
</table>
DEVELOPING SMC3 REGIONAL CENTERS OF EXPERTISE MODEL

- Transportation, Distribution & Logistics; Wind & Solar Power (St. Clair County Community College)
- Product Lifecycle Management; Adv. Mfg., Transportation, Distribution & Logistics (Mott Community College)
- Nanotechnologies in Material Sciences; Adv. Mfg. Vacuum Technologies (Oakland Community College)
- Advanced Manufacturing Technologies (Schoolcraft College)
- Advanced Manufacturing and Innovation Education (Washtenaw Community College)
- Advanced Manufacturing Automation Integration, Design, & Process Industry Technologies (Henry Ford Community College)
- Advanced Manufacturing Welding Technologies (Monroe County Community College)
- Transportation, Distribution & Logistics; Wind & Solar Power (Macomb Community College)
- Automotive Alternative Fuels and Hybrid Vehicles (Macomb Community College)
- Advanced Manufacturing Career Pathways (Wayne County Community College District)
- Advanced Manufacturing Technologies (Schoolcraft College)
- Advanced Manufacturing Career Pathways (Wayne County Community College District)

February 2010
DEVELOPING SMC3 REGIONAL CENTERS OF EXPERTISE MODEL

- **Industries**
  - Advanced Manufacturing
  - Automation
  - Integration & Production
  - Maintenance

- **Universities**
  - Advanced Manufacturing & Innovation Education
  - Education

- **Businesses**
  - Alternative Energy: Automotive Fuels & Powertrains
    - (MACOMB CC)
    - Pending Wind/Solar Power (ST. CLAIR CCC)

- **Professional Societies**
  - MOTT CC

- **High Schools**
  - Advanced Manufacturing - Welding Technologies
  - MONROE CCC

- **Middle Schools**
  - Transportation, Distribution & Logistics
  - ST. CLAIR CCC, MOTT CC

- **Workforce Development Groups**
  - SE MI Regional Collaboration
  - Educational Capacity Building
  - Resource Sharing
  - Innovation Education
  - Partners In Regional Workforce & Economic Development Solutions

February 2010
### What’s our time line and who’s helping…

**UPDATED July 28, 2010**

<table>
<thead>
<tr>
<th>Action Required</th>
<th>Who’s Involved</th>
<th>ETA</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leverage the Consortium; Community College network</td>
<td>Ray Kelly; Al Lenz, WCCC</td>
<td>April 21</td>
<td>Completed</td>
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<tr>
<td>Develop learning requirements from test information</td>
<td>Steve Runde</td>
<td>April 15</td>
<td>Completed</td>
</tr>
<tr>
<td>Overlay learning requirements on CEWD Competencies</td>
<td>Steve Runde, Steve Kujala</td>
<td>April 16</td>
<td>Completed</td>
</tr>
<tr>
<td>Schedule and complete conversation with the Community College network</td>
<td>Steve Kujala</td>
<td>April 21</td>
<td>Completed</td>
</tr>
<tr>
<td>Build curriculum map; ID locations, courses, methods of deliver, etc with community colleges</td>
<td>Steve Kujala</td>
<td>April 30/July 30</td>
<td>In progress, on revised target</td>
</tr>
<tr>
<td>Define employee assessment tools</td>
<td>Steve Runde</td>
<td>May 7</td>
<td>Completed</td>
</tr>
<tr>
<td>Develop/Deploy/Aggregate benchmark information</td>
<td>Steve Runde</td>
<td>May 30</td>
<td>Completed</td>
</tr>
<tr>
<td>Discuss program with Union Leaders/Communicate program</td>
<td>Ray, Steve and Steve</td>
<td>Throughout Initiative</td>
<td>On going, on target</td>
</tr>
<tr>
<td>Launch ready</td>
<td>Ray, Steve, Steve, Union</td>
<td>June Early August</td>
<td>In progress, on revised target</td>
</tr>
<tr>
<td>Begin employee assessment activity (Aug 10, 11, 14, 20, 27 are potential dates)</td>
<td>Steve Runde</td>
<td>Mid August</td>
<td>Planning in progress</td>
</tr>
<tr>
<td>Review employee assessment results; build employee learning plan</td>
<td>Steve Runde/ Steve Kujala</td>
<td>Late August</td>
<td></td>
</tr>
<tr>
<td>Student enrollment</td>
<td>Employees</td>
<td>Summer Late August</td>
<td>Revised target</td>
</tr>
</tbody>
</table>
As of August 2nd, here is the work in progress

- **Curriculum mapping**
  - WCCCD has accepted the delivery role.
  - Tues/Thurs, 6 – 8 PM and/or Saturday, 8 to 12 PM. Daily content TBD
  - 120 SB
  - Future, any SMC3 college can/will deliver
  - Work remains to identify learning activity by session

- **Learning Plan Development**
  - Establishing the list of EE
  - CADI dates set for this round
    - **For Large Groups**
      - August 10  General Offices Auditorium
      - August 11  Allen Road Rec Center
      - August 20 Allen Road Rec Center
  - Learning plan work with each EE
    - CADI report review sessions, Aug 24
    - Use results from existing CADI or EEI tests
    - Enrollment specifics evolving with WCCCD