DCEP Generalist Training

7:45   Registration (15 minutes)

8:00   1. Generalist Training Introduction (30 minutes)
    Objectives
    Overview
    Resources

8:30   2. Data Center Profiler (DC Pro) Overview (40 minutes)
    Introduction to Benchmarking and PUE
    Overview of DC Pro
    Introduction to PUE Estimator

9:10   3. IT Equipment (40 minutes)
    IT Equipment Energy Use
    Provisioning and Minimizing Waste
    Best Practices

9:50   Break (10 minutes)

10:00   4. Air Management (50 minutes)
    Environmental Specifications and Metrics
    Airflow and Temperature Management
    Best Practices

10:50   5. Cooling Systems (60 minutes)
    Air- and Liquid-Cooled Systems
    Chilled-Water Plant
    Best Practices

11:50   Lunch (60 minutes)

12:50   6. Electrical Systems (50 minutes)
    Causes of Energy Inefficiencies
    Electrical Power Chain
    Best Practices

1:40   7. Assessment Process Manual (30 minutes)
    Objectives of DCEP Assessments
    DCEP Assessment Process Manual
    DCEP Assessment Process

2:10   Break (10 minutes)

2:20   8. Data Center Profiler (DC Pro) Case Study (40 minutes)
    Input Steps
    Results
    Abbreviations and Acronyms

3:00   Exam (120 minutes)

5:00   End of Generalist Training/Exam

DCEP HVAC-Specialist Training (Day 1)

8:00   **Registration (15 minutes)**

8:15   **9. HVAC Specialist Training Introduction (30 minutes)**
        Overview
        Resources
        Performance Metrics

8:45   **13. Air Handlers and Air Conditioners (80 minutes)**
        HVAC Systems Overview
        Airside Economizers
        Indirect Evaporative Coolers
        Energy Efficiency Opportunities
        Best Practices

10:05   **Break (10 minutes)**

10:15   **14. Liquid Cooling (70 minutes)**
        Why Liquid Cooling?
        When to Consider Liquid Cooling
        Cooling Configurations
        Best Practices

11:25   **Lunch (60 minutes)**

12:25   **15. Chilled Water Plants (60 minutes)**
        Metrics to Identify Energy Efficiency Opportunities
        Optimizing Energy Usage
        Design Considerations for Data Centers
        Best Practices

1:25   **16. Cooling System Controls (45 minutes)**
        Temperature, Humidity, and Airflow Control
        Cooling Plant Control
        Feedback and Diagnostics
        IT Equipment Integration
        Best Practices

2:10   **Break (10 minutes)**

2:20   **17. Assessment Process (60 minutes)**
        Role and Purpose of DCEPs
        Objectives of DCEP Assessment
        DCEP Assessment Process

3:20   **18. Modeling Data Center HVAC Systems (75 minutes)**
        Levels of Modeling Detail
        Modeling Energy Usage
        Annual Energy Usage vs. Annual Energy Cost
        Abbreviations and Acronyms

4:35   **End of HVAC Specialist Training Day 1**

DCEP HVAC-Specialist Training (Day 2)

8:00   **Registration (15 minutes)**

8:15   **10. Environmental Requirements (45 minutes)**
        Temperature and Humidity Specifications
        Recommended and Allowable Ranges (ASHRAE/NEBS)
        Compliance Metric RCI
        Best Practices

9:00   **11. Airflow and Temperature Management (80 minutes)**
        Air Management Goals and Results
        Energy vs. Thermal Performance
        Air Management Measures
        High-Level Air Management Metrics
        Data Gathering and Management
        Best Practices

10:20   **Break (10 minutes)**

10:30   **12. DOE Air Management Tool (80 minutes)**
        DOE Tool Suite
        DOE Air Management Tool
        Application Example
        Input Steps and Results

11:50   **Lunch (60 minutes)**

12:50   **Exam (180 minutes)**

3:50   **End of HVAC Specialist Training/Exam**

CENTER OF EXPERTISE
FOR ENERGY EFFICIENCY IN DATA CENTERS