

# Operations Training Working Group (OTWG)

December 14th, 2017

ERCOT 800 Airport Drive, Taylor, Building TCC 1, Room 253/WebEx

0900-1200

* Anti-trust Admonition

To avoid raising concerns about antitrust liability, participants in ERCOT activities should refrain from proposing any action or measure that would exceed ERCOT’s authority under federal or state law. For additional information, stakeholders should consult the Statement of Position on Antitrust Issues for Members of ERCOT Committees, Subcommittees, and Working Groups, which is posted on the ERCOT website.

* Disclaimer

All presentations and materials submitted by Market Participants or any other Entity to ERCOT staff for this meeting are received and posted with the acknowledgement that the information will be considered public in accordance with the ERCOT Websites Content Management Operating Procedure.

* Approval of Meeting Notes – October 2017
* Winter Storm Drill (Oct 18/19)
  + Report at January OTWG Meeting
* Grid Ex IV Drill (Nov 15/16)
  + Report at January OTWG Meeting
* 2018 Black Start Training
  + Early registration begins has started and ends on December 15, 2017.
  + All Hazards Restoration Stages Framework
  + Black Start Primer (10 CEHs)
    - ERCOT Black Start Restoration Strategy, basic system restoration principles, and TOP & GOP fundamentals.
    - Strongly Recommended for Operators with less than 5 years, Recommended refresher for everyone
    - 10 additional CEHs / Limited availability (50)
    - **Attendance to just the Primer course will not meet NERC Standard EOP-005-2 requirements R10, R12, or R18. Black Start and Restoration Training meets these NERC Standard Requirements.**
  + 2018 Black Start and Restoration Training Schedule
    - Pilot
      * Generator and Transmission System Dynamics (10 CEHs) January 8th 12 pm – 5 pm and January 9th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

January 9th 1pm to 5pm, January 10th 7am – 5pm, January 11th 7 am – 12 pm.

* + - Session 1
      * Generator and Transmission System Dynamics (10 CEHs) January 29th 12 pm – 5 pm and January 30th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

January 30th 1pm to 5pm, January 31st 7am – 5pm, February 1st 7 am – 12 pm.

* + - Session 2
      * Generator and Transmission System Dynamics (10 CEHs) February 5th 12 pm – 5 pm and Februatry 6th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

February 6th 1pm to 5pm, February 7th 7am – 5pm, February 8th 7 am – 12 pm.

* + - Session 3
      * Generator and Transmission System Dynamics (10 CEHs) February 12th 12 pm – 5 pm and February 13th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

February 13th 1pm to 5pm, February 14th 7am – 5pm, February 15th 7 am – 12 pm.

* + - Session 4
      * Generator and Transmission System Dynamics (10 CEHs) February 19th 12 pm – 5 pm and January 20th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

February 20th 1pm to 5pm, February 21st 7am – 5pm, February 22nd 7 am – 12 pm.

* + - Session 5
      * Generator and Transmission System Dynamics (10 CEHs) February 26th 12 pm – 5 pm and February 27th 7am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

February 27th 1pm to 5pm, February 28th 7am – 5pm, March 1st 7 am – 12 pm.

* + - Session 6
      * Generator and Transmission System Dynamics (10 CEHs) March 5th 12 pm – 5 pm and March 6th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

March 6th 1pm to 5pm, March 7th 7am – 5pm, March 8th 7 am – 12 pm.

* + - Inclement Weather Session
      * Generator and Transmission System Dynamics (10 CEHs) March 12th 12 pm – 5 pm and March 13th 7 am to 12 pm
      * Black Start and Restoration Course (19 CEHs)

March 13th 1pm to 5pm, March 14th 7am – 5pm, March 15th 7 am – 12 pm.

* 2018 OTS (Length 18 hours / 16 CEHs) (Changes are in Red)
  + Theme

Generators, Markets and Transmission, Working Together to Ensure Reliability

* + Tuesday
    - 10a CEO Introduction (Bill Magness / ERCOT)
    - 11a Extreme Natural Events (1 CEH) (Kristi Hobbs / ERCOT)
  + LUNCH
    - 1p Hurricane Harvey (3 CEH)
      * Weatherman Perspective (Chris Coleman)(50 min)
      * CenterPoint Perspective (CenterPoint)(30 min)
      * AEP Perspective (AEP)(30 min)
      * NRG Perspective (NRG)(30 min)
      * ERCOT Perspective (ERCOT Operations Management)(30 min)
    - 4p Resource Integration Impacts (1 CEH) (John Bernecker / ERCOT)
      * Identify the types of studies done prior to allowing a unit connect to include:
      * Sub Synchronous Oscillation
      * Angle and voltage stability
      * Short Circuit
      * Remedial Action Schemes
      * Identify how often studies are performed
      * Recognize Generic Transmission Constraint and the impact of a resource’s ability to connect and generate to the system.
      * Recall the process for a Resource to connect to the System.
      * Identify the tool used to track a resource’s progress to connect to the system
      * Recognize future projects and the challenges associated with them.
  + Wednesday
    - 8a Markets and Reliability (1 CEH) (David Maggio / ERCOT)
    - 9a Grid Scale Renewables: Planning, Operations and Forecasting (1 CEH) (Nitika Mago / ERCOT)
      * Recognize Impacts of utility scale renewables on ERCOT operations
      * Identify challenges associated with forecasting wind and solar in Texas
      * Identify cause and effect triggers of the California transient voltage disturbance event
      * Identify how ERCOT is preventing a similar event from occurring here.
      * Identify the types of grid-scale solar technologies
      * Recognize Wind queue and grid-scale solar queue
      * Identify Far West Texas transmission project impacts
      * Recognize peak contribution formulas
      * Recall Lessons learned from recent eclipse.
      * Identify Potential challenges in the 2022 total eclipse path.
    - 10a Trends in Markets and Policy: Texas and Beyond (1 CEH) (Paul Wattles)
      * Recall Global renewable adoptions
      * Recognize the impacts of the declining cost of solar
      * Recognize the characteristics of Surging storage and EVs
      * Recognize the impacts of declining cost of storage
      * Recall regulatory impacts: hot and cold markets (Texas vs. CA/Hawaii/Germany)
      * Identify the differences between Net metering, PUCT metering policy, and NOIE metering
      * Compare the costs of grid-scale vs. distributed solar
      * Recall 4CP
      * Recognize Demand Response
    - 11a Distributed Energy and Demand Response (1 CEH) (Clayton Stice / ERCOT)
      * Identify Types of DERs being used in ERCOT
      * Trend toward fossil rather than renewable
      * Recognize Reporting mechanisms and gaps
      * Recognize how Mapping large DERs improve situational awareness
      * Identify reliability considerations for DER reliability
      * Identify changes to DR status report
      * List benefits and challenges associated with utility scale vs. DERs
      * Identify Impacts of DERs on the ERCOT nodal market
      * Recognize Drivers behind DER adoption
      * Environmental; backup power; $$; etc.
      * Recall Characteristics of inverter-based DER
      * Recall ERCOT DER interconnection requirements
      * Identify IEEE 1547 status and impacts
  + LUNCH
    - 1p RUC Process (1 CEH) (Agee Springer / ERCOT)
      * Identify the differences between HRUC and DRUC
      * Identify parameters used in HRUC and DRUC configurations
      * Identify when HRUC and DRUC in deployed (approve and post results)
      * Identify the purpose of manually overriding HRUC or DRUC results
      * Identify the purpose of a Combined Cycle Suggestion Plan
    - 2p Improving Resiliency – What can be done? (1 CEH) (John Adams / ERCOT)
      * Identify types of events and lessons learned from the following events:
      * Hurricanes
      * Tornados
      * High Winds
      * Freezing Conditions
      * Wildfires
      * Physical Attacks
      * EMP
      * Cyber Attacks
      * Recognize the types of Infrastructure improvements and operational practices that are currently used and future practices that may be implemented.
    - 3p Loss of SCADA, EMS, or LCC (1 CEH) (Dave Penney / TRE, Mark Henry / TRE, Ray Manzanilla / ERCOT)
    - 4p Coordinated Voltage Control (Voltage set point control) (RPC) (1 CEH) (Stephen Solis / ERCOT)
  + Thursday
    - 8a Human Performance Improvement (1 CEH) (Brian Legg / ERCOT)
    - 9a Physical and Cyber Security (1 CEH) (Joshua Aldridge / ERCOT)
    - 10a Australian Black Out Event (1 CEH) (Alex Lee / ERCOT)
      * Identify factors that contributed to the cause of the Australian Blackout Event
      * Identify steps of restoration that were used during this event
      * Recognize market impacts associated with the blackout event
      * Identify lessons learned from the event
    - 11a Seminar Assessment - Scantron assessment
    - 12p CLOSING and Mementos
  + Schedule (Austin Airport Hilton)
    - Pilot – January 23rd – 25th
    - Session 1 – March 27th – 29th
    - Session 2 – April 3rd – 5th
    - Session 3 – April 10th – 12th
    - Session 4 – April 17th – 19th
    - Session 5 April 24th – 26th
    - Session 6 May 1st – 3rd
* Harvey Report
  + TRE will be publishing a study/report on the impacts of Hurricane Harvey in December.
* 2019 Black Start and Restoration Training
  + Pilot: February 25th (Generation and Transmission Dynamics) and February 26th – 28th (Black Start and Restoration Training)
  + Week 1: March 18th (Generation and Transmission Dynamics) and March 19th – 21st (Black Start and Restoration Training)
  + Week 2: March 25th (Generation and Transmission Dynamics) and March 26th – 28th (Black Start and Restoration Training)
  + Week 3: April 1st (Generation and Transmission Dynamics) and April 2nd – 4th (Black Start and Restoration Training)
  + Week 4: April 8th (Generation and Transmission Dynamics) and April 9th – 11th (Black Start and Restoration Training)
  + Week 5: April 15th (Generation and Transmission Dynamics) and April 16th – 18th (Black Start and Restoration Training)
  + Week 6: April 22nd (Generation and Transmission Dynamics) and April 23rd – 25th (Black Start and Restoration Training)
  + Inclement Weather Week: April 29th (Generation and Transmission Dynamics) and April 30th – May 2nd (Black Start and Restoration Training)
* 2019 Operator Training Seminar
  + Pilot: August 13th – 15th
  + Week 1: October 15th – 17th
  + Week 2: October 22nd – 24th
  + Week 3: October 29th – 31st
  + Week 4: November 5th – 7th
  + Week 5: November 12th – 14th
  + Week 6: November 19th – 21st
* New Business
* Adjourn
* Next Meeting Dates (Information will be updated by the meeting)

Jan 11 (1 pm) Annual kickoff meeting (Black Start Pilot)

February None (Black Start Training)

March 8 (1 pm) TCC 1, Rm XXX / WebEx

April 12 (2 pm) TCC 1, Rm XXX / WebEx (after OTS Session 3)

May 9 (1 pm) TCC 1, Rm XXX Trainer Development

May 10 (9 am) TCC 1, Rm 253 / WebEx

June 14 (9 am) TCC 1, Rm 252 / WebEx

July 12 (9 am) TCC 1, Rm 253 / WebEx

August 9 (9 am) TCC 1, Rm 252 / WebEx

September 12 (1 pm) TCC 1, Rm XXX Trainer Development

September 13 (9 am) TCC 1, Rm 253 / Web Ex

October 11 (9 am) TCC 1, Rm 253 / WebEx

November 8 (9 am) TCC 1, Rm 252 / WebEx

December 13 (9 am) TCC 1, Rm 253 / WebEx

[**WebEx Conference**](https://ercot.webex.com/ercot)

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| **OTWG Meeting** |
| Thursday, December 14, 2017 |
| 8:45 am  |  Central Standard Time (Chicago, GMT-06:00)  |  3 hrs 30 mins |

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| Meeting number (access code): 620 402 751 |

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| Meeting password: otwg1214 |

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| **Join by phone** |
| **1-877-668-4493** Call-in toll-free number (US/Canada) |
| **1-650-479-3208** Call-in toll number (US/Canada) |
| [Global call-in numbers](https://urldefense.proofpoint.com/v2/url?u=https-3A__ercot.webex.com_ercot_globalcallin.php-3FserviceType-3DMC-26ED-3D511267867-26tollFree-3D1&d=DwMGaQ&c=trp9rTvIdyEWh1VWB5x8_2JiPaB5oGZOtWPDws2_VoY&r=T0m5Jg90hX6QBKd0dyCgfRQSppFZ4x_43N_zqr-h2HU&m=_FNz5IB8z3sY163Mo8aJY0IxovbVLvuEZ_mps_n1rwo&s=khmkFpvyZZrjrjnTCuzoa2Ne1q9HWx4nQerIjC8MJ4M&e=)  |  [Toll-free calling restrictions](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.webex.com_pdf_tollfree-5Frestrictions.pdf&d=DwMGaQ&c=trp9rTvIdyEWh1VWB5x8_2JiPaB5oGZOtWPDws2_VoY&r=T0m5Jg90hX6QBKd0dyCgfRQSppFZ4x_43N_zqr-h2HU&m=_FNz5IB8z3sY163Mo8aJY0IxovbVLvuEZ_mps_n1rwo&s=Ct6FVSy9SBpwHKf7OGbEJTPv-GPJDgq9R6Vl0RVo__k&e=) |

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