



## 2021 PJM DRAFT Training Plan

### Task to Training Matrix – PJM Online Training

Course Title ( <i>LMS Code</i> )		CEH	Stand	Sim	EOP	Transmission Task Associations						Market Cert Hour
						Task 02	Task 07	Task 08	Task 10	Task 11	EOP-005 R8	
OL Annual System Restoration Training ( <i>ONLEOPR13</i> )		1	1	0	1	--	--	--	--	--	--	--
OL DOE Reporting Requirements ( <i>ONLMSCDE4</i> )		1	1	0	1	--	--	--	--	--	--	--
OL Wind Generation Operating Considerations ( <i>ONLMSCWG4</i> )		1	0	0	--	--	--	--	--	--	--	--
2020 Summer Emergency Procedures Refresh ( <i>DRLEPS20P</i> )		1	1	0	1	--	Yes	--	--	--	--	--
2020 Fall System Restoration Refresh ( <i>DRLSRF20P</i> )		1	1	0	1	--	--	--	--	Yes	Yes	--
2020 Winter Emergency Procedures Refresh ( <i>DRLEPF20P</i> )		1.5	1.5	0	1.5	--	Yes	Yes	--	--	--	--
2021 Spring Restoration Drill Refresh ( <i>DRLSRD21P</i> )		1	1	0	1	--	--	--	--	Yes	Yes	--
OL NERC Standards ( <i>ONLNERC17</i> )		8	8	0	8	--	--	--	--	--	--	--
OL Electrical Theory ( <i>ONLFUNET1</i> )		3	0	0	--	--	--	--	--	--	--	--
OL NUC-001 ( <i>JITOPS143</i> )		1	1	0	--	--	--	--	--	--	--	--
Transmission ITP	OL Intro to PJM & Comm, Op Para 1 (T) ( <i>ONLTRN17A</i> )	3	0.5	0	--	--	--	--	Yes	--	--	--
	OL Ops Parameters 2 & 3 (T) ( <i>ONLTRN17B</i> )	1.5	0.5	0	1.5	--	--	--	--	--	--	--
	OL Ops Parameters 4 & 5 (T) ( <i>ONLTRN17C</i> )	1	0.5	0	0.5	--	--	--	--	--	--	--
	OL Stability, BES & Outages (T) ( <i>ONLTRN17D</i> )	2	0	0	--	Yes	--	--	--	--	--	--
	OL Emergency Procedures (T) ( <i>ONLTRN17E</i> )	2.5	0.5	0	2.5	--	Yes	Yes	--	--	--	--
	OL System Restoration (T) ( <i>ONLTRN17F</i> )	2.5	0.5	0	2.5	--	--	--	--	Yes	Yes	--
Generation ITP	OL Intro to PJM & Communications (G) ( <i>ONLGEN16A</i> )	2	0.5	0	--	--	--	--	--	--	--	--
	OL PJM Markets & Real-Time Ops (G) ( <i>ONLGEN16B</i> )	2	0	0.5	--	--	--	--	--	--	--	0.5
	OL Outage Scheduling (G) ( <i>ONLGEN16C</i> )	1.5	0.5	0	--	--	--	--	--	--	--	--
	OL Emergency Procedures (G) ( <i>ONLGEN16D</i> )	3.5	1	0.5	3.5	--	--	--	--	--	--	--
	OL System Restoration (G) ( <i>ONLGEN16E</i> )	1.5	1	0	1.5	--	--	--	--	--	--	--
2020 Seminar – Lessons Learned ( <i>SEM20SV01</i> )		1	1	0	1	Yes	--	--	--	--	--	--
2020 Seminar – EP for Transmission ( <i>SEM20SV02</i> )		1	1	0	1	--	--	--	--	--	--	--
2020 Seminar – EP & Updates for Generation ( <i>SEM20SV03</i> )		1	1	0	1	--	--	--	--	--	--	1.0
2020 Seminar – New Technologies ( <i>SEM20SV04</i> )		1.5	0	0	--	--	--	--	--	--	--	--
Governor Control and ACG ( <i>ONLMSCGC</i> )		1	0	0	--	--	--	--	--	--	--	--
HEMP/GMD ( <i>ONLMSCHMP</i> )		1	0.5	0	1	--	--	--	--	--	--	--
Unit Dispatch-Normal & Off-SCED ( <i>JITOPS201</i> )		1	0	0	1	--	--	--	--	--	--	1.0
Blackout Lessons Learned ( <i>PJMVTSO12</i> )		2	0	0	2	--	--	--	--	Yes	--	--
Operating Concepts Self-Study*		2	0	1.5	--	--	--	--	--	--	--	--



## 2021 PJM DRAFT Training Plan

Course Title (LMS Code)	CEH	Stand	Sim	EOP	Transmission Task Associations						Market Cert Hour
					Task 02	Task 07	Task 08	Task 10	Task 11	EOP-005 R8	
Voltage Control Self-Study*	3	0	2	--	--	--	--	--	--	--	--

\*Available for self-study, pre-registration required

### DRAFT – Online Training to be added to the PJM LMS in 2021

Please note this is for planning purposes only and may be subject to change

Course Title	CEH	Stand	Sim	EOP	Market Cert Hour
<b>2021 Q1</b>					
Voltage Control*	Yes		Yes		
Operational Concepts*	Yes		Yes		
2021 Spring Restoration Refresh	Yes	Yes		Yes	
<b>2021 Q2</b>					
Stability	Yes	Yes		Yes	
LMP	Yes				Yes
Generator Energy Schedules & Parameters	Yes				Yes
IROLs	Yes		Yes		
2021 Summer Emergency Procedures Refresh	Yes	Yes		Yes	
<b>Summer Readiness</b> – Operational Updates	Yes			Yes	
<b>Summer Readiness</b> – Market Updates	Yes				Yes
<b>2021 Q3</b>					
ARR/FTR Basics					Yes
Generation BLIs	Yes				Yes
Impedance & Power Flow	Yes				
Flow Devices	Yes				
Ops-X Scenario*	Yes		Yes		
Markets Scenario*	Yes		Yes		Yes
<b>2021 Q4</b>					
2021 Fall Restoration Refresh	Yes			Yes	
2021 Winter Emergency Procedures Refresh	Yes			Yes	

\*Available for self-study, pre-registration required



## 2021 PJM DRAFT Training Plan

Task to Training Matrix – See Calendar for **DRAFT** Dates (schedule subject to change)

PJM Virtual Training Sessions	CEH	Stand	Sim	EOP	Transmission Task Associations						Market Cert Hour
					Task 02	Task 07	Task 08	Task 10	Task 11	EOP-005 R8	
Locational Marginal Pricing (LMP)	1.5	0	0	--	--	--	--	--	--	--	1.5
Operating Reserve Settlements Part 1	1.5	0	0	--	--	--	--	--	--	--	1.5
Operating Reserve Settlements Part 2	1.5	0	0	--	--	--	--	--	--	--	1.5
Generation BLIs Part 1	1.5	0	0	--	--	--	--	--	--	--	1.5
Generation BLIs Part 2	1.0	0	0	--	--	--	--	--	--	--	1.0
Generator Energy Schedules & Parameters	1.5	0	0	--	--	--	--	--	--	--	1.5
ARR/FTR Basics	--	--	--	--	--	--	--	--	--	--	1.5
ARR/FTR Advanced	--	--	--	--	--	--	--	--	--	--	2.0
Regulation Market Overview	1.5	0	0	--	--	--	--	--	--	--	1.5
Reserve Market Overview	1.5	0	0	--	--	--	--	--	--	--	1.5
Load BLIs Part 1	--	--	--	--	--	--	--	--	--	--	1.5
Load BLIs Part 2	--	--	--	--	--	--	--	--	--	--	1.5
PJM Settlement Tools	--	--	--	--	--	--	--	--	--	--	1.5
Load Parameters	--	--	--	--	--	--	--	--	--	--	1.0
Objective Function and Production Cost	--	--	--	--	--	--	--	--	--	--	1.5
Day Ahead Market Simulation	1.5	0	1.5	--	--	--	--	--	--	--	1.5
Real-Time Market Simulation	1.5	0	1.5	--	--	--	--	--	--	--	1.5
Transmission Line Protection	2	2	1.5	--	--	--	--	--	--	--	--
Voltage Control with Generators & LTCs	2	0	1.5	--	--	--	--	--	--	--	--
Capacitors, Ferranti Rise & Surge Impedance Loading	2	0	1.5	--	--	--	--	--	--	--	--
Synching Islands	2	2	1.5	2	--	--	--	--	Yes	--	--
Dynamic Reserves	2	2	1	2	--	--	--	--	Yes	--	--
Impedance & Power Flow on AC Transmission Lines	2	0	0	--	--	--	--	--	--	--	--
Communications	1.5	1.5	0	1.5	--	--	--	--	--	--	--
Stability	2	2	0	2	--	--	--	--	--	--	--
Overview of Emergency Procedures	1.5	1.5	0	1.5	--	Yes	Yes	--	--	--	--
Reporting Transmission Outages via eDART	1.5	1.5	0	--	Yes	--	--	--	--	--	--
System Restoration Overview Part 1	2	2	0	2	--	--	--	--	Yes	--	--
System Restoration Overview Part 2	2	2	0	2	--	--	--	--	Yes	Yes	--
Blackout Lessons Learned	2	0	0	2	--	--	--	--	Yes	--	--

# DRAFT Training Calendar

# 2021

## January

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

- 1/7 Transmission Line Protection
- 1/11 Day Ahead Market Simulation
- 1/13 Dynamic Reserves
- 1/21 Locational Marginal Pricing
- 1/21 Voltage Control with Generators and LTCs
- 1/25 Overview of PJM Emergency Procedures
- 1/27 Generator Energy Schedules & Parameters

## February

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

- 2/2 ARR/FTR Basics
- 2/4 ARR/FTR Advanced
- 2/4 Blackout Lessons Learned
- 2/8 Real-Time Market Simulation
- 2/10 Capac, Ferranti Rise & Surge Imped Ldng
- 2/11 DR Load Management Registration Process
- 2/16 Synching Islands
- 2/18 Day Ahead Market Simulation
- 2/22 Elec Theory Impedance & Power Flow on AC Lines
- 2/24 Generation BLIs

## March

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

- 3/2 Communication
- 3/4 Load BLIs Part 1
- 3/8 Load BLIs Part 2
- 3/9 DR Overview
- 3/10 Reporting Transmission Outages via eDART
- 3/16 Load Parameters
- 3/18 Stability
- 3/22 System Restoration
- 3/24 Operating Reserve Settlements Part 1
- 3/30 Operating Reserve Settlements Part 2

## April

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

- 4/1 Transmission Line Protection
- 4/1 Cap Exch: DR& EE State Subsidy Cert Demo
- 4/5 Objective Function and Production Cost
- 4/7 Dynamic Reserves
- 4/13 Voltage Control with Generators and LTCs
- 4/15 Regulation Market Overview
- 4/19 Overview of PJM Emergency Procedures
- 4/21 Reserve Market Overview
- 4/27 Settlement Tools
- 4/29 Blackout Lessons Learned

## May

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

- 5/3 Day Ahead Market Simulation
- 5/5 Capac, Ferranti Rise & Surge Imped Ldng
- 5/10 Voltage Control with Generators and LTCs
- 5/11 Locational Marginal Pricing
- 5/12 DR Economic DR In Energy Markets
- 5/13 Synching Islands
- 5/17 Elec Theory Impedance & Power Flow on AC Lines
- 5/19 Generator Energy Schedules & Parameters
- 5/25 Communication
- 5/27 Real-Time Market Simulation

## June

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

- 6/2 ARR/FTR Basics
- 6/3 DR Economic Offers in Markets Gateway
- 6/8 Reporting Transmission Outages via eDART
- 6/9 Generation BLIs Part 1
- 6/10 Generation BLIs Part 2
- 6/14 Stability
- 6/16 Load BLIs Part 1
- 6/22 Load BLIs Part 2
- 6/24 System Restoration Part 1
- 6/28 System Restoration Part 2
- 6/29 DR Load Mgmt Events/Settlements/Cmpl
- 6/30 Transmission Line Protection

## July

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- 7/1 Load Parameters
- 7/8 Dynamic Reserves
- 7/12 Objective Function and Production Cost
- 7/14 Voltage Control with Generators and LTCs
- 7/20 Operating Reserve Settlements Part 1
- 7/22 Overview of PJM Emergency Procedures
- 7/26 Operating Reserve Settlements Part 2
- 7/27 Blackout Lessons Learned

## August

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

- 8/2 Capac, Ferranti Rise & Surge Imped Ldng
- 8/4 Regulation Market Overview
- 8/10 Synching Islands
- 8/12 Reserve Market Overview
- 8/16 Settlement Tools
- 8/18 Elec Theory Impedance & Power Flow on AC Lines
- 8/23 Load Mgt Reg & Events w/Tool demo
- 8/24 Load Mgt M&V/Cmpl/Testing/Settmt w/Tool demo
- 8/25 Day Ahead Market Simulation
- 8/26 Communication
- 8/31 Locational Marginal Pricing

## September

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

- 9/1 Econ Enrgy - Reg/Evnts/M&V/Stimt w/Tool (DR Hub/MG)
- 9/2 Econ AS - Reg/Evnts/M&V/Stimt w/Tool (DR Hub/MG)
- 9/13-17 Seminar - Ohio

## October

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

- 10/18 DR Overview
- 10/21 Economic DR in Ancillary Services
- 10/25-29 Seminar - MD

## November

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

- 11/1-5 Seminar - MD
- 11/8-12 Seminar - MD
- 11/15-19 Gen ITP - OH
- 11/16-18 Market Optimization Wrkshp - OH
- 11/29-12/3 Trans ITP - OH
- 11/30 Market Settlements 101 - OH
- 12/1-3 Market Settlements Advanced - OH

## December

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

- 12/6-10 Seminar - Ohio
- 12/8 DR Load Management Registration Process
- 12/13-17 Seminar - Ohio

LEGEND	
<span style="background-color: #d9ead3; border: 1px solid black; padding: 2px;"> </span>	Virtual Training
<span style="background-color: #d9ead3; border: 1px solid black; padding: 2px;">abc</span>	Curriculum
<span style="background-color: #d9ead3; border: 1px solid black; padding: 2px;">abc</span>	Seminar
<span style="background-color: #f2f2f2; border: 1px solid black; padding: 2px;"> </span>	Tentative: CTC
<span style="background-color: #fff2cc; border: 1px solid black; padding: 2px;"> </span>	Tentative: Hilton Columbus Downtown
<span style="background-color: #f2f2f2; border: 1px solid black; padding: 2px;"> </span>	Confirmed: Four Seasons Baltimore
<span style="background-color: #d9ead3; border: 1px solid black; padding: 2px;"> </span>	Tentative: Hilton Polaris