

Draft Proposal

Maximum Notification and Startup Times for Capacity Units

- Proposed Operational Approach
- Additional Market / Committee Issues
- Previous Committee meeting slides (background)

- **Peak Periods** (should these line up with RPM / outage periods):
 - May 1 – Sep 30
 - Dec 1 – Feb 29
- **Peak (PMNST¹)** \approx 70% number w/exception process & alerts to reduce exception times²
- **Off Peak (PMNST¹)** \approx 90% number w/exception process & alerts to reduce exception times²
- **Alert timing** – PJM will “declare” alerts to reduce lead time to Peak:
 - Will be based on exception timeframes
 - Off Peak – week ahead – use eDart Margins
 - Peak – days ahead – use eDart Margins

¹PMNST – Peak Maximum Notice / Start Time

² Applies to both price and cost schedules

- PJM develop alert process and messages similar to Cold Weather Alerts
- Alert “cancelled” startup costs – will use current process for cost recovery
- PJM make tool and process changes to forecast into the exception “time windows” to implement the alert process
 - Longer term commitment
 - Scenario based commitment
- Exception process should be a long term (annual vs. daily) process
- Startup & Notification time “options”
 - Values (70% / 90%) based on one or combination of approaches:
 - Performance data from PLS table (see later slide)
 - Version of the current “market” times (see 2 “TTS” slides)
 - MMU provided historic data – by unit type
 - Unit specific
 - Operational “norm” value

- Proposal since 12/10 SOS:
 - Exceptions up to x (3?) days documented – nothing longer
- 2 phases of “notice”
 - 1st – “think we might need them” – no startup compensation
 - 2nd notice to be ready to run – normal startup cost recovery process
- Who is the “exception judge”?
- Does location matter?

- Proposed Peak Exceptions:
 - Physical limitations
 - Sequential starts
 - Gas contracts
- Proposed Off Peak Exceptions
 - Peak Period Exceptions
 - Labor contract, staffing related
 - Historic off peak run history*
 - Potential economic exception (will need more definition)
- Proposed General Exceptions
 - Return from outages
 - Generation bottled by outages
 - Base load / always on (nuclear, wind, etc.)

*PJM may need to modify as current / future retirements and RTEP outages may change historic dispatch patterns

- Operating Committee review draft tariff and manual language to address Reliability Concerns
 - Proposed Implementation date – 6/1/2011
- Units with Notification + Startup that are outside of proposed times and are not granted an exception will be considered a Forced Outage.
- RPM and Market Impacts will not be addressed by OC
 - engage PJM RPM staff
 - Engage MIC
 - RPM “grandfather” issues
- Demand Side – engage MIC – equity issues

Cold Notification and Cold Startup Percentiles

(In hours)

Parameter Class	Cold Notification Time			Cold Startup Time			CS + CN		
	70th	80th	90th	70th	80th	90th	70th	80th	90th
PETROLEUMSTEAMPRE-1985	4	8.5	18	12.5	14	18	16.5	22.5	36
PETROLEUMSTEAMPOST-1985	1	1	2	6	12	14	7	13	16
COMBINEDCYCLE	2	5	7	5	6.2	8	7	11.2	15
SUBCRITICALCOALPLANTS	2	2	4	15	16	20	17	18	24
SUPERCRITICALCOALPLANTS	2	2	8	19	20	22	21	22	30
SMALLCTSTO29MW	0.25	1	2	0.5	0.5	0.8	0.75	1.5	2.8
MEDIUMCTS30TO65MW	0.2	0.3	1.4	0.3	0.5	0.5	0.5	0.8	1.9
MEDIUMLARGECS66TO134MW	1	2	2	0.5	0.7	1	1.5	2.7	3
LARGECS136TO180MW	2	5	6	0.5	0.7	1	2.5	5.7	7

*Data based on active cost-based offers within one standard deviation of the mean, since November, 2007.

**Analysis based on calculating notification and startup time distributions independently, then adding together.

Time-To-Start Percentiles

(In hours)

Parameter Class	All Months			Peak Months			Off-Peak Months		
	70th	80th	90th	70th	80th	90th	70th	80th	90th
PETROLEUMSTEAMPRE-1985	18	20	32	18	20	30	17	19	32
PETROLEUMSTEAMPOST-1985	9	13	14	9	13	14	9	13	14
COMBINEDCYCLE	9	11	14	8.5	10	13.5	9	11	14
SUBCRITICALCOALPLANTS	16.5	18	22	16.5	18	22.5	16	18	22
SUPERCRITICALCOALPLANTS	21	22	30	21	22	30	21	22	30
SMALLCTSTO29MW	1	1.5	2.2	1	1.5	2.2	1	1.5	2.2
MEDIUMCT30TO65MW	0.5	0.8	1.7	0.5	0.7	1.7	0.5	1	2
MEDIUMLARGECT56TO134MW	2	2	3.3	2	2	3.3	2	2.3	3.4
LARGECT136TO180MW	3	5	6.6	2.5	4.3	6.6	4	5	6.8

*Data based on active cost-based offers within one standard deviation of the mean since, November, 2007.

**Analysis based on adding notification and startup times together first, then calculating the distribution.

Proposed Operational Approach (with numbers)

- **Peak Periods:**
 - May 1 – Sep 30
 - Dec 1 – Feb 29
- **Peak** (PMNST¹) \approx 70% number w/exception process & alerts to reduce exception times²
- **Off Peak** (PMNST¹) \approx 90% number w/exception process & alerts to reduce exception times²

Parameter Class	OPS	All Months			70th	Peak Months		Off-Peak Months		
		70th	80th	90th		80th	90th	70th	80th	90th
PETROLEUMSTEAMPRE-1985	18	18	20	32	18	20	30	17	19	32
PETROLEUMSTEAMPOST-1985	10	9	13	14	9	13	14	9	13	14
COMBINEDCYCLE	10	9	11	14	8.5	10	13.5	9	11	14
SUBCRITICALCOALPLANTS	18	16.5	18	22	16.5	18	22.5	16	18	22
SUPERCRITICALCOALPLANTS	24	21	22	30	21	22	30	21	22	30
SMALLCTSTO29MW	1	1	1.5	2.2	1	1.5	2.2	1	1.5	2.2
MEDIUMCT S30TO65MW	.5	0.5	0.8	1.7	0.5	0.7	1.7	0.5	1	2
MEDIUMLARGE CT S66TO134MW	2	2	2	3.3	2	2	3.3	2	2.3	3.4
LARGE CT S136TO180MW	3	3	5	6.6	2.5	4.3	6.6	4	5	6.8

¹PMNST – Peak Maximum Notice / Start Time

² Applies to both price and cost schedules

Previous Committee meeting slides (background)

- Proposed business rules for maximum startup and notification times for capacity units
 - Currently no maximum requirements
 - PJM staff envision between 48 hours and 5 days maximum
 - 48 hours ideal for reliability, but may not be feasible for units
 - Propose an approach similar to parameter limited schedule – guidelines by unit type – all other times are exceptions
 - Envision a “system conditions” notification to prep the units to reduce lead time for reliability – may be forecast hot weather alert, cold weather alert, weather emergencies, etc.

- Consider a seasonal notification requirement – allowed to be shortened by owner during winter and summer peak periods
 - Reserve Triggers for Spring and Fall
- Request for quantifying current startup and notification times in buckets; maybe by unit type
- Develop Exception Criteria
- Impact on Demand Response Requirements

TTS Range (hour)	Number of Units	MW
TTS = 0	188	28,027
0 < TTS <= 1	347	20,450
1 < TTS <= 2	83	4,760
2 < TTS <= 3	58	4,227
3 < TTS <= 4	12	1,507
4 < TTS <= 5	30	4,151
5 < TTS <= 6	14	4,964
6 < TTS <= 12	101	15,881
12 < TTS <= 24	186	52,550
24 < TTS <= 48	37	18,049
48 < TTS <= 72	5	1,353
72 < TTS <= 96	10	4,074
TTS > 96	8	1,760
	1079	161,755

PJM (Notification + Time to Start) by unit type

TTS Range (hour)	Type	Number of Units	MW
TTS = 0	CT	10	285
TTS = 0	Diesel	4	33
TTS = 0	Hydro	49	4,217
TTS = 0	Landfill	20	101
TTS = 0	Nuclear	18	18,938
TTS = 0	Steam	55	4,112
TTS = 0	Wind	32	341
0 < TTS <= 1	CT	288	16,078
0 < TTS <= 1	Diesel	20	188
0 < TTS <= 1	Hydro	25	1,605
0 < TTS <= 1	Landfill	5	19
0 < TTS <= 1	Steam	6	2,508
0 < TTS <= 1	Wind	3	53
1 < TTS <= 2	CT	77	4,687
1 < TTS <= 2	Diesel	3	14
1 < TTS <= 2	Hydro	1	35
1 < TTS <= 2	Landfill	1	12
1 < TTS <= 2	Steam	1	13
2 < TTS <= 3	CT	46	3,878
2 < TTS <= 3	Diesel	5	12
2 < TTS <= 3	Landfill	4	33
2 < TTS <= 3	Steam	3	304
3 < TTS <= 4	CT	3	243
3 < TTS <= 4	Diesel	1	2
3 < TTS <= 4	Steam	8	1,262

TTS Range (hour)	Type	Number of Units	MW
4 < TTS <= 5	CT	19	886
4 < TTS <= 5	Steam	11	3,265
5 < TTS <= 6	CT	2	115
5 < TTS <= 6	Steam	12	4,849
6 < TTS <= 12	CT	32	2,796
6 < TTS <= 12	Diesel	2	4
6 < TTS <= 12	Steam	67	13,082
12 < TTS <= 24	CT	6	372
12 < TTS <= 24	Hydro	2	0
12 < TTS <= 24	Nuclear	3	3,186
12 < TTS <= 24	Steam	175	48,992
24 < TTS <= 48	Nuclear	7	6,076
24 < TTS <= 48	Steam	30	11,973
48 < TTS <= 72	CT	1	60
48 < TTS <= 72	Steam	4	1,293
72 < TTS <= 96	Nuclear	2	1,593
72 < TTS <= 96	Steam	8	2,481
TTS > 96	Diesel	4	10
TTS > 96	Nuclear	1	1,010
TTS > 96	Steam	3	740
Total		1079	161,755

Peak Maximum Unit Lead Time Proposal

Hours of Lead Time	70 % of units have (N+CS) ≤ # below	80% of units have (N+CS) ≤ # below	90% of units have (N+CS) ≤ # below	Recommended Max (N + CS) hours
SMALL CTS TO 29 MW	4	4	5	5
MEDIUM CTS 30 TO 65 MW	3	9	12	12
MEDIUM LARGE CTS 66 TO 135	3	4	15	12
LARGE CTS 136 TO 180 MW	3	4	7	12
COMBINED CYCLE	12	14	16	16
PETROLEUM STEAM POST-1985	13	15	24	24
PETROLEUM STEAM PRE-1985	20	65	72	48
SUB CRITICAL COAL PLANTS	20	22	29	24
SUPER CRITICAL COAL PLANT	25	30	87	48

Chart shows current notification and cold start time that companies have submitted in parameter limited schedules (added together); lists the % of units that have Notification + Cold Start times that are less than or equal to that value (i.e., if you have 4 hours in a 70 pct column it means that 70% of the units in that class have submitted Notification + Cold Start times that are 4 hours or less).

- PJM to investigate Tool Modification
- PJM to define communication procedures
- exception criteria
- Proposed Timeline:
 - November Meetings: Solicit Additional Feedback
 - December Meeting: Present Documented Proposal
 - Manual and Tariff language
 - January Meeting: Solicit feedback on proposal
 - February/March: Committee Approval
 - June Implementation
- Market Issues
 - Impact on RPM payments for violating start-up/notification rules