



# WPL - Approaches to Address Maintenance Outages and Add Backs with Examples

DRS

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- With present WPL calculation method:
  - Administrative process needed to address Outages
  - Add backs needed to determine WPL
    - Also need to create a way to distribute facility's proprietary add back information to CSPs (present and prospective)
- Modify the WPL calculation to address outages:
  - Exclude atypical low usage time periods (outages)
    - For example, exclude periods when usage is below 25% of 5CP average
  - Add backs become unnecessary for WPL calculation

- Keep present WPL calculation and pursue an Administrative Approach
  - Requires administrative determination of outage based on interpretation of outage definition
  - CSP would need to request outage date exclusion
  - PJM would need to review and approve/deny each request
  - Add back will need to be calculated and incorporated in WPL calculation (more complicated WPL calculation)
  - Facility would need to advise any other prospective CSP(s) of its outage date(s) so prospective CSP(s) could properly determine facility's WPL
- Modify WPL calculation to a Quantitative Approach to exclude atypical low usage periods
  - Addresses outages and events because atypical low use periods are excluded
  - Any CSP would need only meter data (no add back data) to determine WPL



# Facility Outage – Administrative Approach Example

Normal Days						Full Day Outage on 1/16/2018						Partial Day Outage on 1/16/2018								
EDC Account #	0129384091234					EDC Acc	0129384091234					EDC Acc	0129384091234							
Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18			
HE1	1,694	1,876	1,885	1,996	1,725	HE1	1,694	1,876	351	1,996	1,725	HE1	1,694	1,876	351	1,996	1,725			
HE2	1,697	1,773	1,908	2,044	1,690	HE2	1,697	1,773	326	2,044	1,690	HE2	1,697	1,773	326	2,044	1,690			
HE3	1,694	1,819	1,882	1,955	1,749	HE3	1,694	1,819	387	1,955	1,749	HE3	1,694	1,819	387	1,955	1,749			
HE4	1,727	1,812	1,757	1,606	1,716	HE4	1,727	1,812	391	1,606	1,716	HE4	1,727	1,812	391	1,606	1,716			
HE5	1,710	1,825	1,709	1,781	1,739	HE5	1,710	1,825	409	1,781	1,739	HE5	1,710	1,825	409	1,781	1,739			
HE6	1,740	2,046	1,944	1,912	1,599	HE6	1,740	2,046	427	1,912	1,599	HE6	1,740	2,046	427	1,912	1,599			
HE7	1,959	2,213	1,993	1,977	1,555	HE7	1,959	2,213	445	1,977	1,555	HE7	1,959	2,213	445	1,977	1,555			
HE8	2,084	2,290	1,991	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790			
HE9	2,015	2,298	2,042	2,224	1,985	HE9	2,015	2,298	460	2,224	1,985	HE9	2,015	2,298	481	2,224	1,985			
HE10	2,014	2,421	2,025	2,331	2,102	HE10	2,014	2,421	399	2,331	2,102	HE10	2,014	2,421	499	2,331	2,102			
HE11	2,098	2,363	1,815	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003			
HE12	2,089	2,305	1,805	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023			
HE13	2,005	2,244	1,843	2,167	2,007	HE13	2,005	2,244	396	2,167	2,007	HE13	2,005	2,244	800	2,167	2,007			
HE14	2,073	2,325	2,007	2,131	2,049	HE14	2,073	2,325	398	2,131	2,049	HE14	2,073	2,325	1,650	2,131	2,049			
HE15	1,969	2,210	2,016	2,062	1,926	HE15	1,969	2,210	402	2,062	1,926	HE15	1,969	2,210	2,016	2,062	1,926			
HE16	1,912	2,134	1,976	2,035	1,813	HE16	1,912	2,134	406	2,035	1,813	HE16	1,912	2,134	1,976	2,035	1,813			
HE17	1,791	2,121	1,959	2,032	1,887	HE17	1,791	2,121	410	2,032	1,887	HE17	1,791	2,121	1,959	2,032	1,887			
HE18	1,777	2,131	1,858	1,947	1,758	HE18	1,777	2,131	385			HE18	1,777	2,131						
HE19	1,817	2,066	1,733	1,860	1,658	HE19	1,817	2,066	418			HE19	1,817	2,066						
HE20	1,768	2,113	1,691	1,883	1,619	HE20	1,768	2,113	422	1,883	1,619	HE20	1,768	2,113	1,691	1,883	1,619			
HE21	1,718	1,974	1,550	1,800	1,609	HE21	1,718	1,974	416	1,800	1,609	HE21	1,718	1,974	1,550	1,800	1,609			
HE22	1,742	1,898	1,506	1,828	1,675	HE22	1,742	1,898	430	1,828	1,675	HE22	1,742	1,898	1,506	1,828	1,675			
HE23	1,695	1,858	1,181	1,871	1,621	HE23	1,695	1,858	434	1,871	1,621	HE23	1,695	1,858	1,181	1,871	1,621			
HE24	1,651	1,820	721	1,740	1,602	HE24	1,651	1,820	438	1,740	1,602	HE24	1,651	1,820	721	1,740	1,602			
Peak7_21	2,098	2,421	2,042	2,331	2,102	2,199	Peak7_	2,098	2,421	463	2,331	2,102	1,883	Peak7_	2,098	2,421	2,016	2,331	2,102	2,193
							Peak7_	2,098	2,421	exclude	2,331	2,102	2,167							

Administrative determination for these exclusions



# Facility Outage – Quantitative Approach Example

Normal Days						Full Day Outage on 1/16/2018						Partial Day Outage on 1/16/2018								
EDC Account #	0129384091234					EDC Acc	0129384091234					EDC Acc	0129384091234							
Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18			
HE1	1,694	1,876	1,885	1,996	1,725	HE1	1,694	1,876	351	1,996	1,725	HE1	1,694	1,876	351	1,996	1,725			
HE2	1,697	1,773	1,908	2,044	1,690	HE2	1,697	1,773	326	2,044	1,690	HE2	1,697	1,773	326	2,044	1,690			
HE3	1,694	1,819	1,882	1,955	1,749	HE3	1,694	1,819	387	1,955	1,749	HE3	1,694	1,819	387	1,955	1,749			
HE4	1,727	1,812	1,757	1,606	1,716	HE4	1,727	1,812	391	1,606	1,716	HE4	1,727	1,812	391	1,606	1,716			
HE5	1,710	1,825	1,709	1,781	1,739	HE5	1,710	1,825	409	1,781	1,739	HE5	1,710	1,825	409	1,781	1,739			
HE6	1,740	2,046	1,944	1,912	1,599	HE6	1,740	2,046	427	1,912	1,599	HE6	1,740	2,046	427	1,912	1,599			
HE7	1,959	2,213	1,993	1,977	1,555	HE7	1,959	2,213	445	1,977	1,555	HE7	1,959	2,213	445	1,977	1,555			
HE8	2,084	2,290	1,991	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790			
HE9	2,015	2,298	2,042	2,224	1,985	HE9	2,015	2,298	460	2,224	1,985	HE9	2,015	2,298	481	2,224	1,985			
HE10	2,014	2,421	2,025	2,331	2,102	HE10	2,014	2,421	399	2,331	2,102	HE10	2,014	2,421	499	2,331	2,102			
HE11	2,098	2,363	1,815	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003			
HE12	2,089	2,305	1,805	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023			
HE13	2,005	2,244	1,843	2,167	2,007	HE13	2,005	2,244	396	2,167	2,007	HE13	2,005	2,244	800	2,167	2,007			
HE14	2,073	2,325	2,007	2,131	2,049	HE14	2,073	2,325	398	2,131	2,049	HE14	2,073	2,325	1,650	2,131	2,049			
HE15	1,969	2,210	2,016	2,062	1,926	HE15	1,969	2,210	402	2,062	1,926	HE15	1,969	2,210	2,016	2,062	1,926			
HE16	1,912	2,134	1,976	2,035	1,813	HE16	1,912	2,134	406	2,035	1,813	HE16	1,912	2,134	1,976	2,035	1,813			
HE17	1,791	2,121	1,959	2,032	1,887	HE17	1,791	2,121	410	2,032	1,887	HE17	1,791	2,121	1,959	2,032	1,887			
HE18	1,777	2,131	1,858	1,947	1,758	HE18	1,777	2,131	385	1,947	1,758	HE18	1,777	2,131	1,858	1,947	1,758			
HE19	1,817	2,066	1,733	1,860	1,658	HE19	1,817	2,066	418	1,860	1,658	HE19	1,817	2,066	1,733	1,860	1,658			
HE20	1,768	2,113	1,691	1,883	1,619	HE20	1,768	2,113	422	1,883	1,619	HE20	1,768	2,113	1,691	1,883	1,619			
HE21	1,718	1,974	1,550	1,800	1,609	HE21	1,718	1,974	426	1,800	1,609	HE21	1,718	1,974	1,550	1,800	1,609			
HE22	1,742	1,898	1,506	1,828	1,675	HE22	1,742	1,898	430	1,828	1,675	HE22	1,742	1,898	1,506	1,828	1,675			
HE23	1,695	1,858	1,181	1,871	1,621	HE23	1,695	1,858	434	1,871	1,621	HE23	1,695	1,858	1,181	1,871	1,621			
HE24	1,651	1,820	721	1,740	1,602	HE24	1,651	1,820	438	1,740	1,602	HE24	1,651	1,820	721	1,740	1,602			
Peak7_21	2,098	2,421	2,042	2,331	2,102	2,199	Peak7_	2,098	2,421	463	2,331	2,102	1,883	Peak7_	2,098	2,421	2,016	2,331	2,102	2,193
							Peak7_	2,098	2,421	exclude	2,331	2,102	2,167							

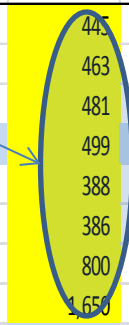
- If present method for WPL calculation is maintained, then load management event add backs are needed to determine WPL
  - Add backs would need to be calculated
  - Add backs would need to be distributed to any CSP interested in prospecting the facility, or
  - Facility would need to provide prospective CSP with their add back data, that they would get from their present CSP
- If quantitative approach is adopted for WPL calculation, then no need for load management events add backs to determine WPL
  - Events days/hours would be excluded from WPL calculation
  - WPL can be calculated by any CSP with just meter data



# LM Event – Administrative approach example

Normal Days						Full Window LM Event 1/16/2018						Partial Window LM Event on 1/16/2018								
EDC Account #	0129384091234					EDC Acc	0129384091234					EDC Acc	0129384091234							
Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18			
HE1	1,694	1,876	1,885	1,996	1,725	HE1	1,694	1,876	1,885	1,996	1,725	HE1	1,694	1,876	1,885	1,996	1,725			
HE2	1,697	1,773	1,908	2,044	1,690	HE2	1,697	1,773	1,908	2,044	1,690	HE2	1,697	1,773	1,908	2,044	1,690			
HE3	1,694	1,819	1,882	1,955	1,749	HE3	1,694	1,819	1,882	1,955	1,749	HE3	1,694	1,819	1,882	1,955	1,749			
HE4	1,727	1,812	1,757	1,606	1,716	HE4	1,727					HE4				606	1,716			
HE5	1,710	1,825	1,709	1,781	1,739	HE5	1,710					HE5				781	1,739			
HE6	1,740	2,046	1,944	1,912	1,599	HE6	1,740	2,046	1,944	1,912	1,599	HE6	1,740	2,046	1,944	1,912	1,599			
HE7	1,959	2,213	1,993	1,977	1,555	HE7	1,959	2,213	443	1,977	1,555	HE7	1,959	2,213	443	1,977	1,555			
HE8	2,084	2,290	1,991	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790			
HE9	2,015	2,298	2,042	2,224	1,985	HE9	2,015	2,298	460	2,224	1,985	HE9	2,015	2,298	481	2,224	1,985			
HE10	2,014	2,421	2,025	2,331	2,102	HE10	2,014	2,421	399	2,331	2,102	HE10	2,014	2,421	499	2,331	2,102			
HE11	2,098	2,363	1,815	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003			
HE12	2,089	2,305	1,805	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023			
HE13	2,005	2,244	1,843	2,167	2,007	HE13	2,005	2,244	396	2,167	2,007	HE13	2,005	2,244	800	2,167	2,007			
HE14	2,073	2,325	2,007	2,131	2,049	HE14	2,073	2,325	398	2,131	2,049	HE14	2,073	2,325	1,650	2,131	2,049			
HE15	1,969	2,210	2,016	2,062	1,926	HE15	1,969	2,210	402	2,062	1,926	HE15	1,969	2,210	2,016	2,062	1,926			
HE16	1,912	2,134	1,976	2,035	1,813	HE16	1,912	2,134	406	2,035	1,813	HE16	1,912	2,134	1,976	2,035	1,813			
HE17	1,791	2,121	1,959	2,032	1,887	HE17	1,791	2,121	410	2,032	1,887	HE17	1,791	2,121	1,959	2,032	1,887			
HE18	1,777	2,131	1,858	1,947	1,758	HE18	1,777	2,131	385	1,947	1,758	HE18	1,777	2,131	1,858	1,947	1,758			
HE19	1,817	2,066	1,733	1,860	1,658	HE19	1,817	2,066	418	1,860	1,658	HE19	1,817	2,066	1,733	1,860	1,658			
HE20	1,768	2,113	1,691	1,883	1,619	HE20	1,768	2,113	422	1,883	1,619	HE20	1,768	2,113	1,691	1,883	1,619			
HE21	1,718	1,974	1,550	1,800	1,609	HE21	1,718	1,974	426	1,800	1,609	HE21	1,718	1,974	1,550	1,800	1,609			
HE22	1,742	1,898	1,506	1,828	1,675	HE22	1,742	1,898	1,506	1,828	1,675	HE22	1,742	1,898	1,506	1,828	1,675			
HE23	1,695	1,858	1,181	1,871	1,621	HE23	1,695	1,858	1,181	1,871	1,621	HE23	1,695	1,858	1,181	1,871	1,621			
HE24	1,651	1,820	721	1,740	1,602	HE24	1,651	1,820	721	1,740	1,602	HE24	1,651	1,820	721	1,740	1,602			
Peak7_21	2,098	2,421	2,042	2,331	2,102	2,199	Peak7_21	2,098	2,421	?	2,331	2,102	?	Peak7_21	2,098	2,421	?	2,331	2,102	?

Add backs would be needed for ALL of these hours



- Calculated the Add Back for HE14 on 1/16/18:
  - Add Back = Reduction
  - Reduction =  $(WPL * ZWWAF * LF) - (Load * LF)$ 
    - WPL = average of 5WCP for DY minus 2 (i.e. 2015/16)
      - $Avg(2205, 2313, 2415, 2375, 2298) = 2321$
  - Reduction =  $(2321 * 1.03 * 1.05) - (398 * 1.05) = 2092$
  - Add back = 2092
- Do this for all event hours then determine max value within window





# LM Event – Quantitative Approach Example

Normal Days						Full Window LM Event 1/16/2018						Partial Window LM Event on 1/16/2018								
EDC Account #	0129384091234					EDC Acc	0129384091234					EDC Acc	0129384091234							
Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18	Date	Fri, 12/15/17	Thu, 1/4/18	Tue, 1/16/18	Fri, 1/19/18	Mon, 1/22/18			
HE1	1,694	1,876	1,885	1,996	1,725	HE1	1,694	1,876	1,885	1,996	1,725	HE1	1,694	1,876	1,885	1,996	1,725			
HE2	1,697	1,773	1,908	2,044	1,690	HE2	1,697	1,773	1,908	2,044	1,690	HE2	1,697	1,773	1,908	2,044	1,690			
HE3	1,694	1,819	1,882	1,955	1,749	HE3	1,694	1,819	1,882	1,955	1,749	HE3	1,694	1,819	1,882	1,955	1,749			
HE4	1,727	1,812	1,757	1,606	1,716	HE4	1,727	1,812	1,757	1,606	1,716	HE4	1,727	1,812	1,757	1,606	1,716			
HE5	1,710	1,825	1,709	1,781	1,739	HE5	1,710	1,825	1,709	1,781	1,739	HE5	1,710	1,825	1,709	1,781	1,739			
HE6	1,740	2,046	1,944	1,912	1,599	HE6	1,740	2,046	1,944	1,912	1,599	HE6	1,740	2,046	1,944	1,912	1,599			
HE7	1,959	2,213	1,993	1,977	1,555	HE7	1,959	2,213	445	1,977	1,555	HE7	1,959	2,213	445	1,977	1,555			
HE8	2,084	2,290	1,991	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790	HE8	2,084	2,290	463	2,078	1,790			
HE9	2,015	2,298	2,042	2,224	1,985	HE9	2,015	2,298	460	2,224	1,985	HE9	2,015	2,298	481	2,224	1,985			
HE10	2,014	2,421	2,025	2,331	2,102	HE10	2,014	2,421	399	2,331	2,102	HE10	2,014	2,421	499	2,331	2,102			
HE11	2,098	2,363	1,815	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003	HE11	2,098	2,363	388	2,323	2,003			
HE12	2,089	2,305	1,805	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023	HE12	2,089	2,305	386	2,249	2,023			
HE13	2,005	2,244	1,843	2,167	2,007	HE13	2,005	2,244	396	2,167	2,007	HE13	2,005	2,244	800	2,167	2,007			
HE14	2,073	2,325	2,007	2,131	2,049	HE14	2,073	2,325	398	2,131	2,049	HE14	2,073	2,325	1,650	2,131	2,049			
HE15	1,969	2,210	2,016	2,062	1,926	HE15	1,969	2,210	402	2,062	1,926	HE15	1,969	2,210	2,016	2,062	1,926			
HE16	1,912	2,134	1,976	2,035	1,813	HE16	1,912	2,134	406	2,035	1,813	HE16	1,912	2,134	1,976	2,035	1,813			
HE17	1,791	2,121	1,959	2,032	1,887	HE17	1,791	2,121	410	2,032	1,887	HE17	1,791	2,121	1,959	2,032	1,887			
HE18	1,777	2,131	1,858	1,947	1,758	HE18	1,777	2,131	385	1,947	1,758	HE18	1,777	2,131	1,858	1,947	1,758			
HE19	1,817	2,066	1,733	1,860	1,658	HE19	1,817	2,066	418	1,860	1,658	HE19	1,817	2,066	1,733	1,860	1,658			
HE20	1,768	2,113	1,691	1,883	1,619	HE20	1,768	2,113	422	1,883	1,619	HE20	1,768	2,113	1,691	1,883	1,619			
HE21	1,718	1,974	1,550	1,800	1,609	HE21	1,718	1,974	426	1,800	1,609	HE21	1,718	1,974	1,550	1,800	1,609			
HE22	1,742	1,898	1,506	1,828	1,675	HE22	1,742	1,898	1,506	1,828	1,675	HE22	1,742	1,898	1,506	1,828	1,675			
HE23	1,695	1,858	1,181	1,871	1,621	HE23	1,695	1,858	1,181	1,871	1,621	HE23	1,695	1,858	1,181	1,871	1,621			
HE24	1,651	1,820	721	1,740	1,602	HE24	1,651	1,820	721	1,740	1,602	HE24	1,651	1,820	721	1,740	1,602			
Peak7_21	2,098	2,421	2,042	2,331	2,102	2,199	Peak7_	2,098	2,421	463	2,331	2,102	1,883	Peak7_	2,098	2,421	2,016	2,331	2,102	2,193
							Peak7_	2,098	2,421	exclude	2,331	2,102	2,238							

- Quantitative approach relies on excluding atypical low use periods
- What is low use threshold?
  - PJM standard economic CBL considers atypical low use to be less than 25% of average period use
    - Only very low use periods, like outages, would be excluded
- How many days to exclude?
  - Proposal that up to three days can be excluded
  - Proposed options if more than three days are excluded. PJM doesn't expect this to happen very often.
    - Contact PJM
    - Use replacement day pool

- The Winter Peak Load is determined by the Curtailment Service Provider based on the customer's peak load between hour ending 7:00 EPT through 21:00 EPT on each of the PJM defined five coincident peak (5CP) days from December through February two Delivery Years prior to the Delivery Year for which the registration is submitted. The Winter Peak Load is calculated as the average of the customer's five peak demand values on the PJM defined winter 5 CP days. PJM posts the RTO winter 5 CP days on the pjw website. If no hourly load data exists for December through February two Delivery Years prior to the Delivery Year, then the CSP may use the most recent December through February hourly load data to calculate the Winter Peak Load. If no hourly load data for the customer exists for the last two December through February periods prior to the Deliver Year, the CSP may provide alternative data to support a Winter Peak Load subject to PJM's review and approval of the use of alternative data.

# Questions?