

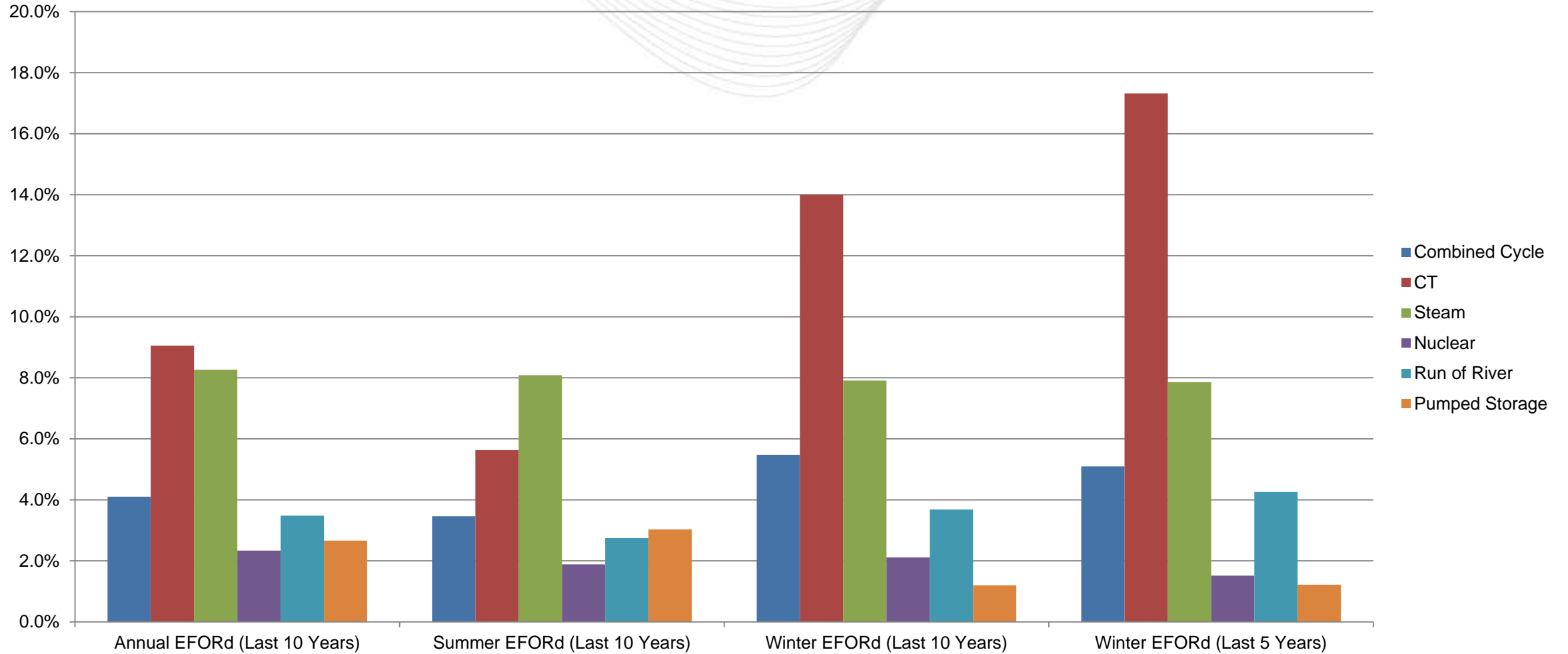


Cold Weather Resource Performance Improvement Education

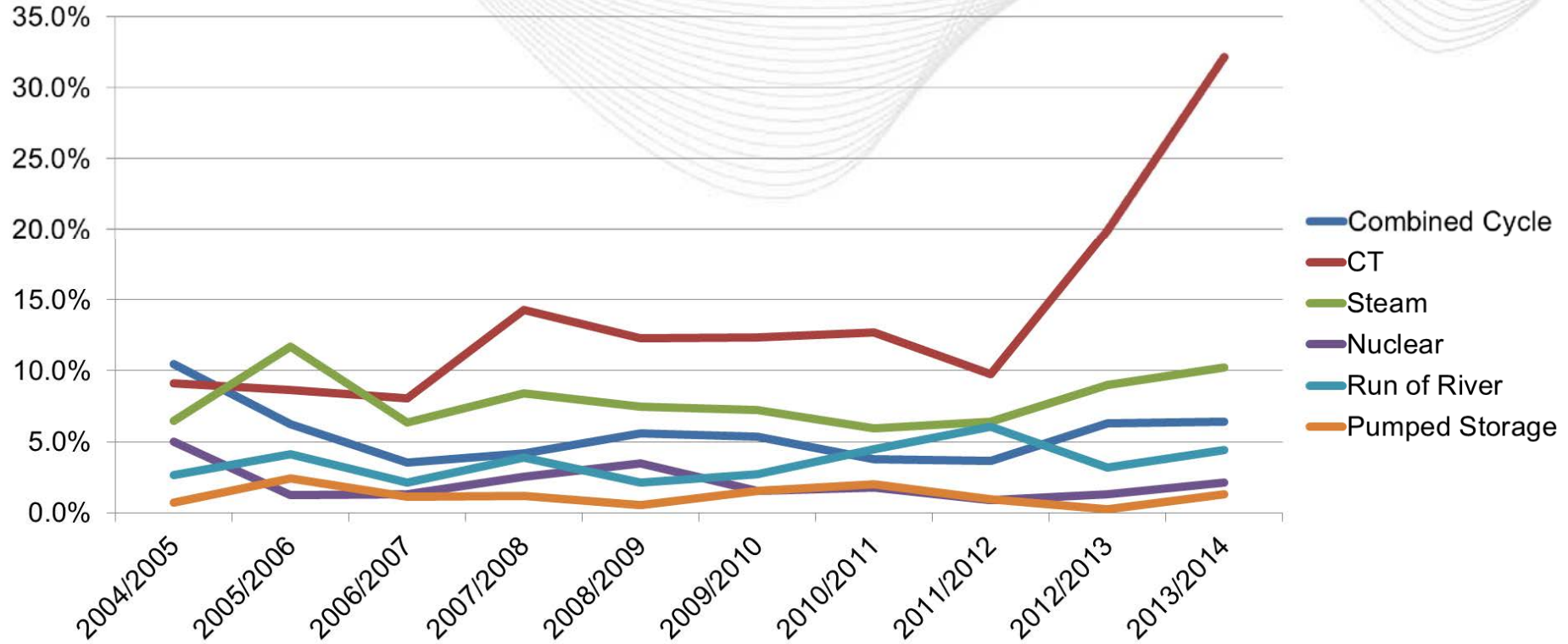
PJM Operating Committee, August 18, 2014

- EFORd Metrics by Unit Type and Dual vs Non-Dual Fuel
- Forced Outage Metrics by Unit Type and Dual vs Non-Dual Fuel
- Unit Performance by Last Operation

Rolling Average EFORd Rate by Unit Type

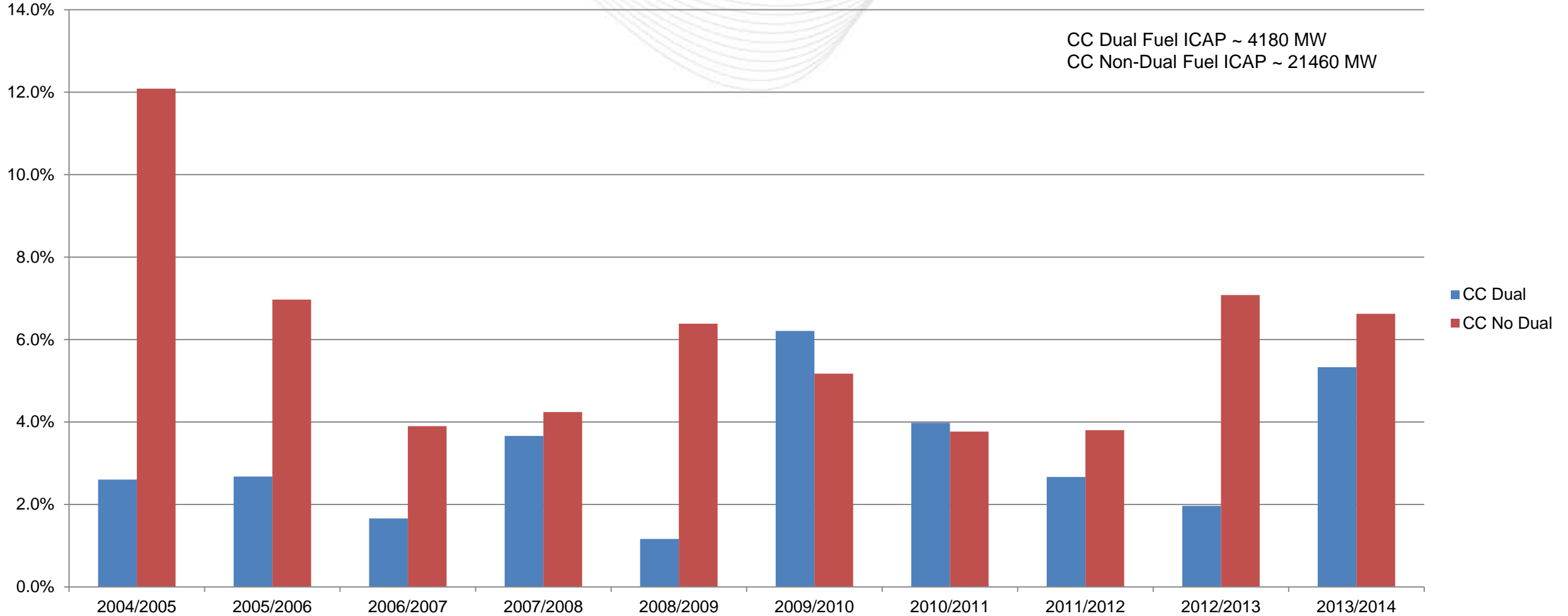


Winter EFORd Rate in Last 10 Years by Unit Type

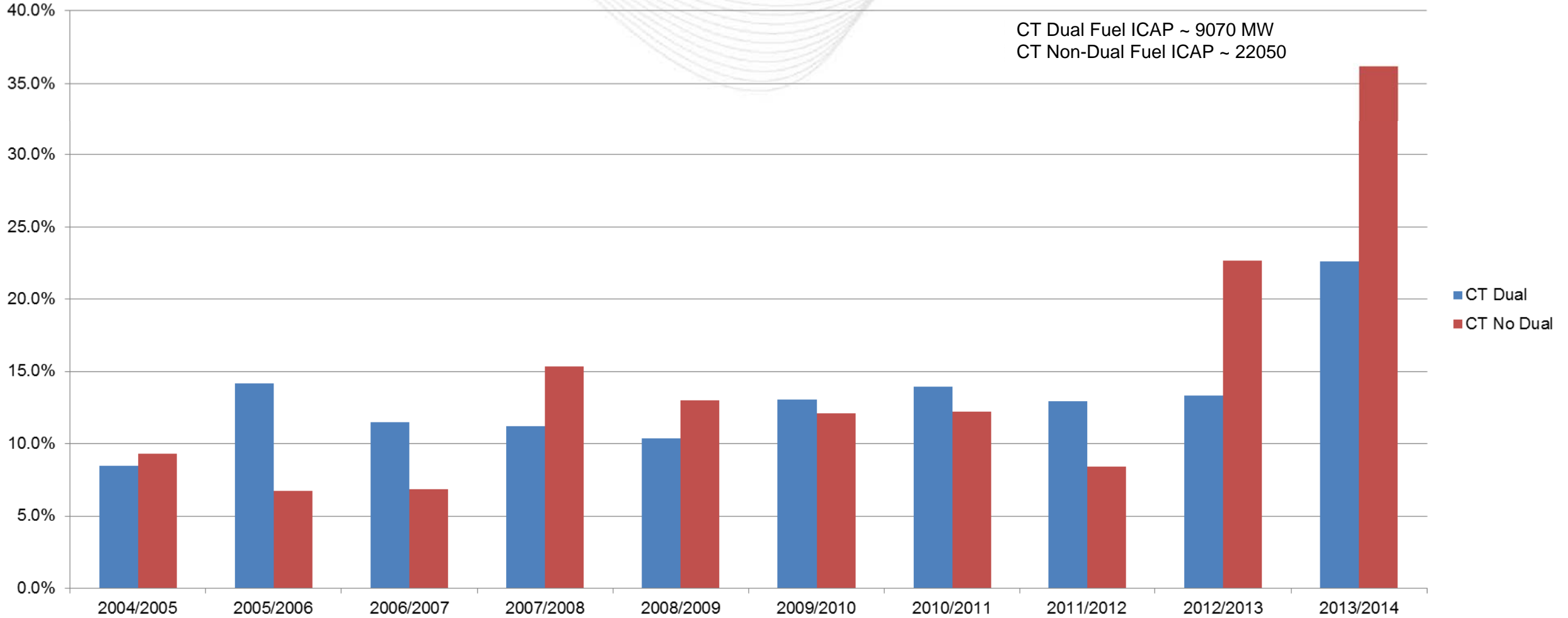


| Average Low Temp (December - February) | | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 04/05 | 05/06 | 06/07 | 07/08 | 08/09 | 09/10 | 10/11 | 11/12 | 12/13 | 13/14 |
| Philadelphia | 28 | 29 | 29 | 30 | 27 | 27 | 26 | 33 | 32 | 25 |
| Richmond | 32 | 31 | 32 | 33 | 30 | 28 | 28 | 34 | 33 | 29 |
| Pittsburgh | 24 | 25 | 23 | 24 | 20 | 21 | 20 | 27 | 26 | 19 |
| Cleveland | 23 | 26 | 23 | 23 | 19 | 24 | 20 | 28 | 26 | 18 |
| Columbus | 25 | 28 | 25 | 25 | 22 | 22 | 21 | 29 | 27 | 20 |
| Lexington | 30 | 28 | 27 | 28 | 25 | 24 | 24 | 30 | 29 | 23 |
| Chicago | 22 | 22 | 21 | 18 | 14 | 19 | 17 | 25 | 22 | 10 |
| RTO Average | 26.3 | 27.0 | 25.7 | 25.9 | 22.4 | 23.6 | 22.3 | 29.4 | 27.9 | 20.6 |

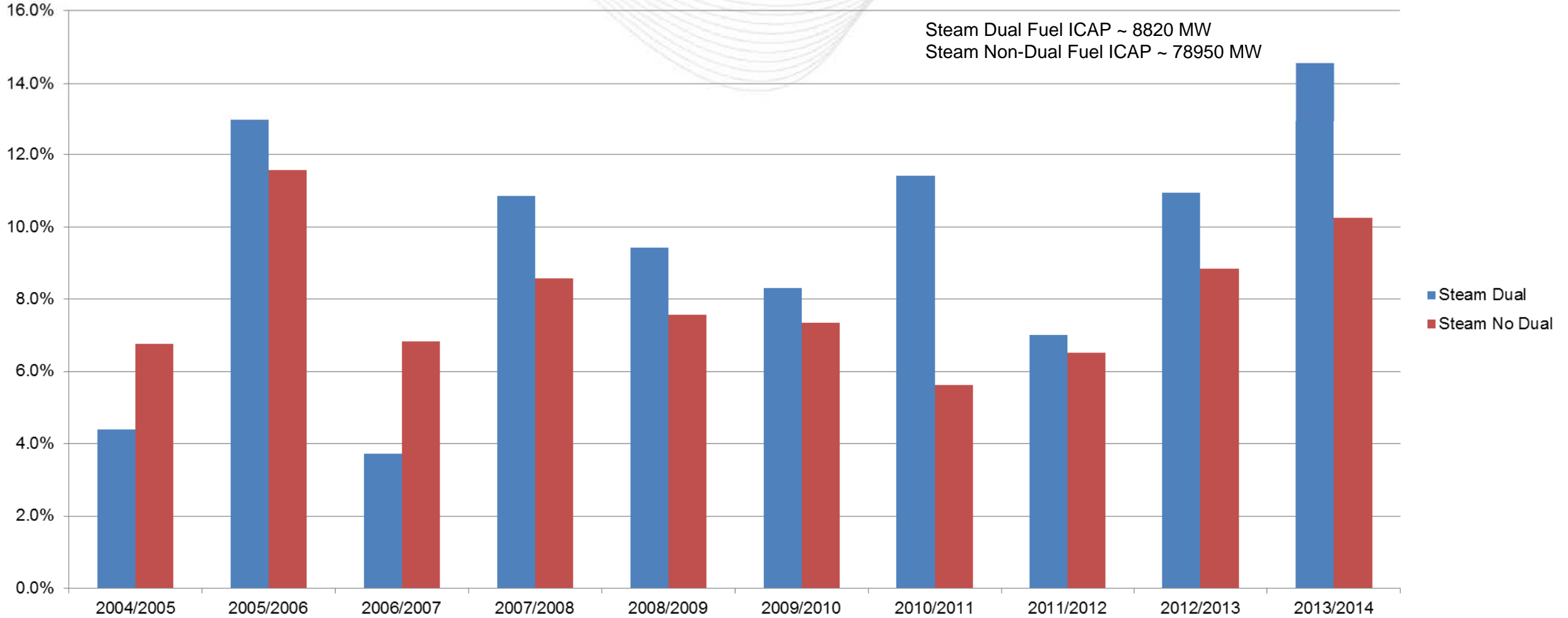
Combined Cycle Dual vs Non-Dual Fuel Winter EFORd Rates



CT Dual vs Non-Dual Fuel Winter EFORd Rates



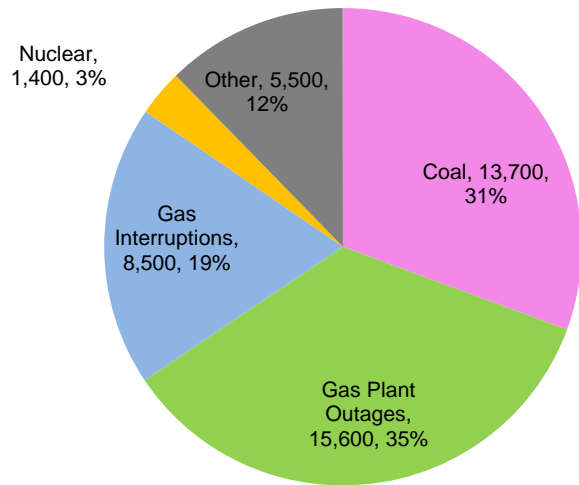
Steam Dual vs Non-Dual Fuel Winter EFORd Rates



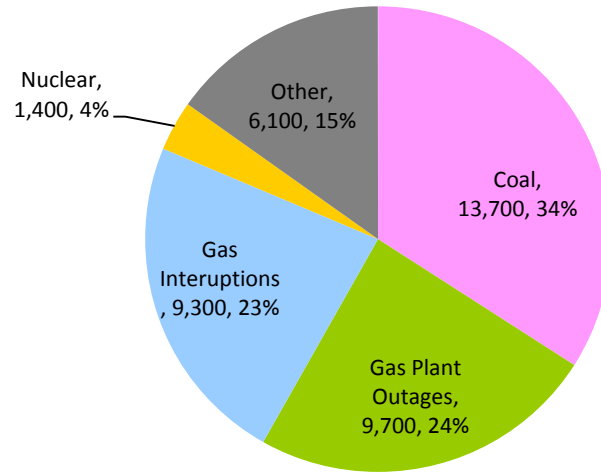
- Dual vs Non-Dual Fuel Capable Forced Outage MWs by Unit Type on
 - 1/7/14 @ 0800
 - 1/7/14 @ 1900
 - 1/24/14 @ 0800
 - 1/28/14 @ 1900
- Single and Dual Fuel Capable Start Failures and Forced Outages Causes on
 - 1/7/14 @ 1900
 - 1/28/14 @ 1900

Forced Outages by Fuel Type Comparison

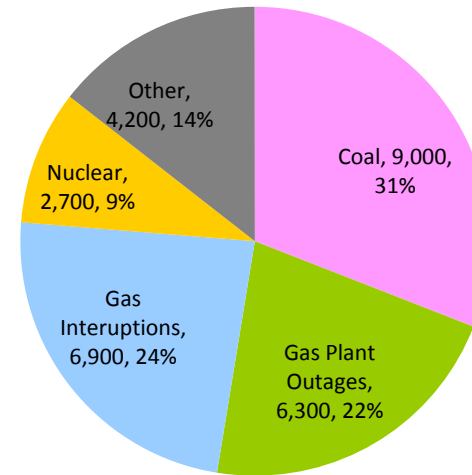
**Forced Outages on 1/7 @ 0800
(44,700 MW)**



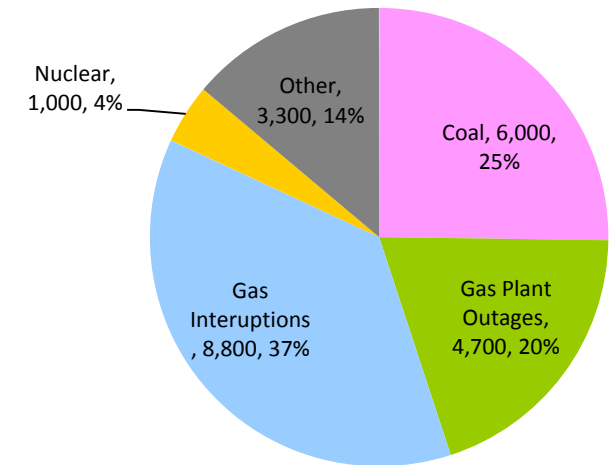
**Forced Outages on 1/7 @ 1900
(40,200 MW)**



**Forced Outages on 1/24 @ 0800
(29,100 MW)**



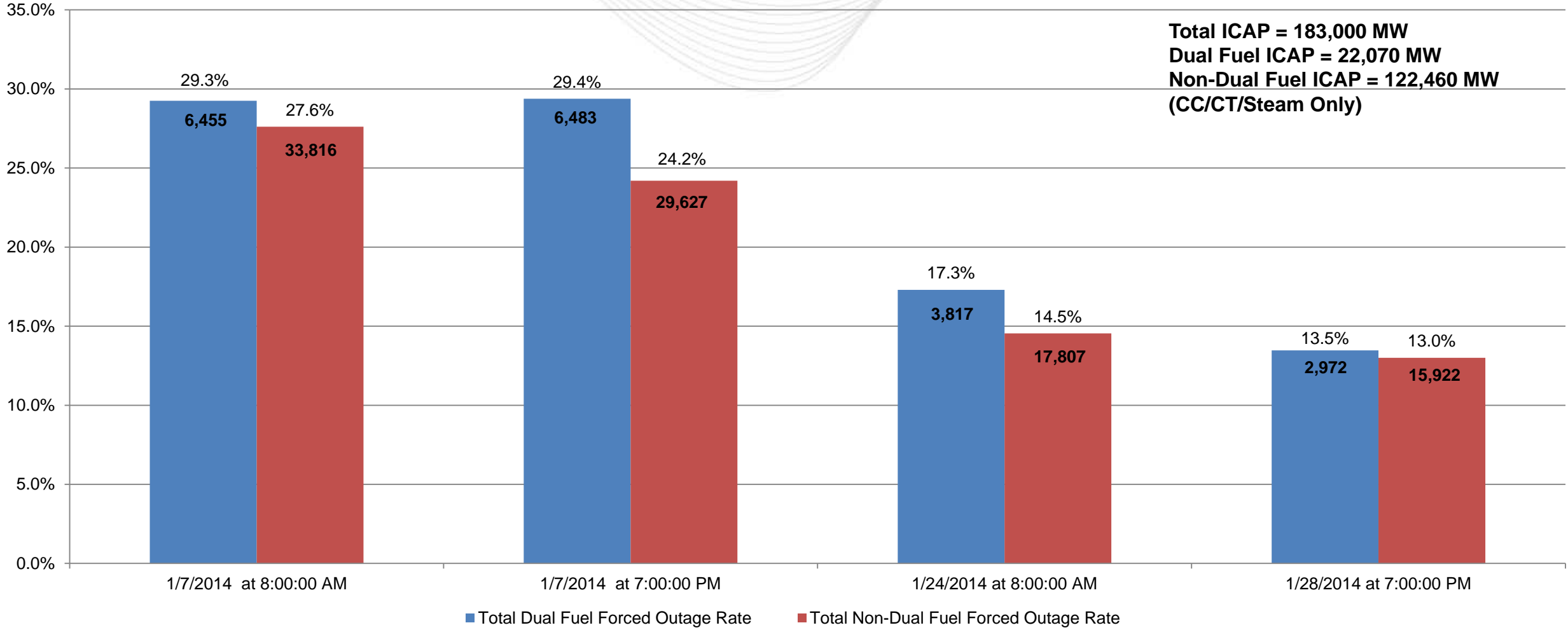
**Forced Outages on 1/28 @ 1900
(23,800 MW)**



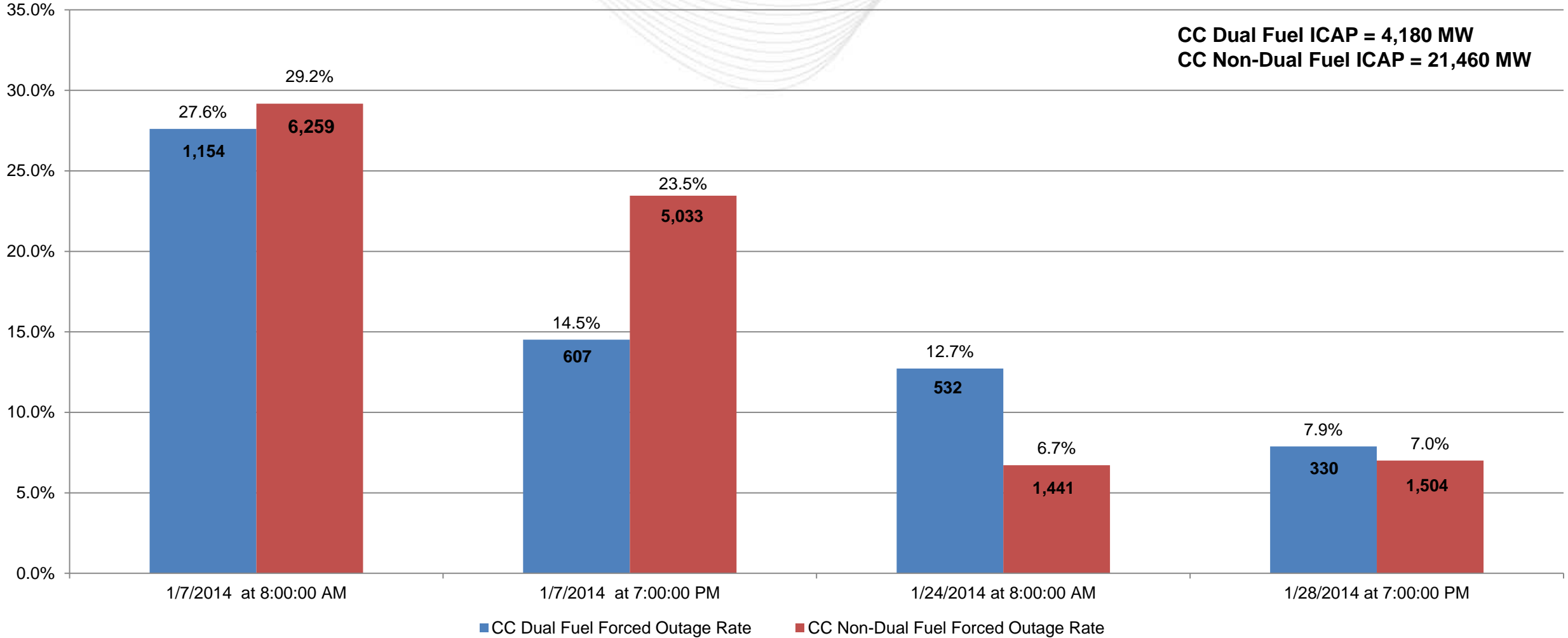


Dual Fuel vs Non-Dual Fuel Forced Outage Rates

Forced Outage Rate of Dual Fuel vs Non-Dual Fuel Units

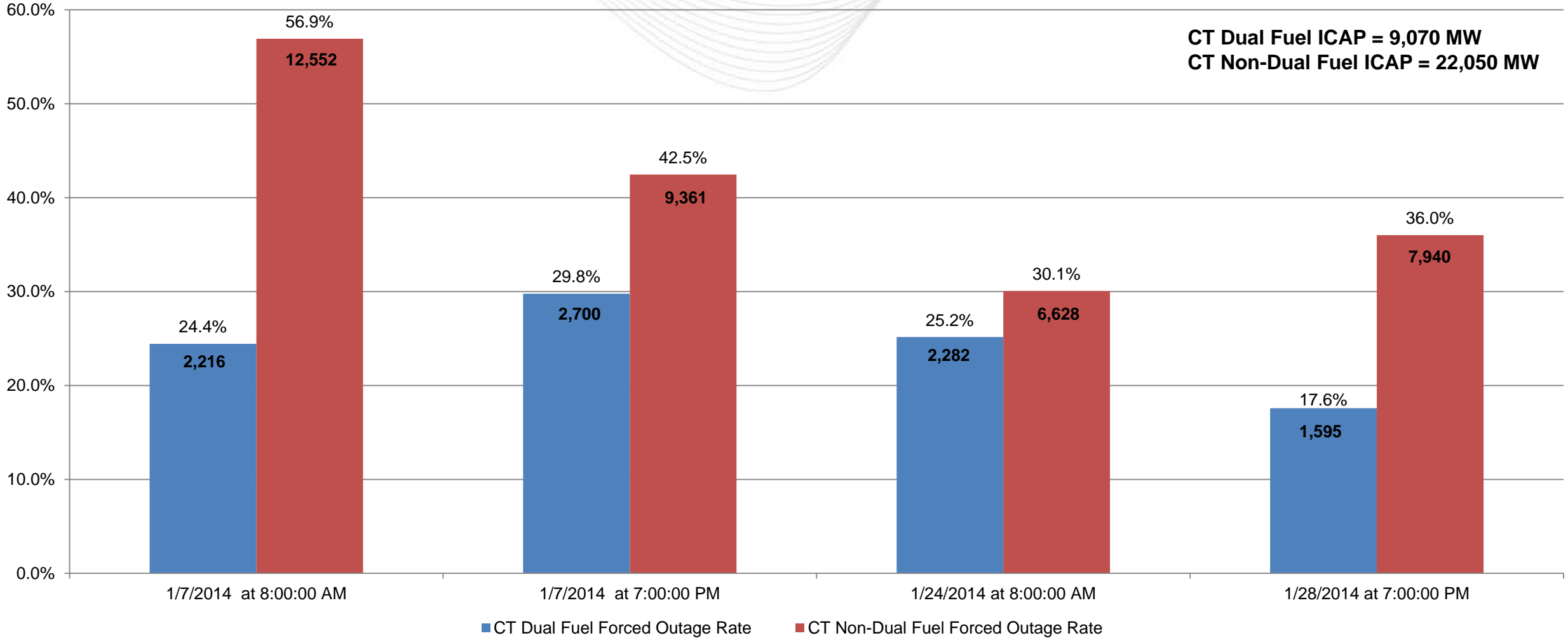


Combined Cycle Dual vs Non-Dual Fuel Forced Outage %

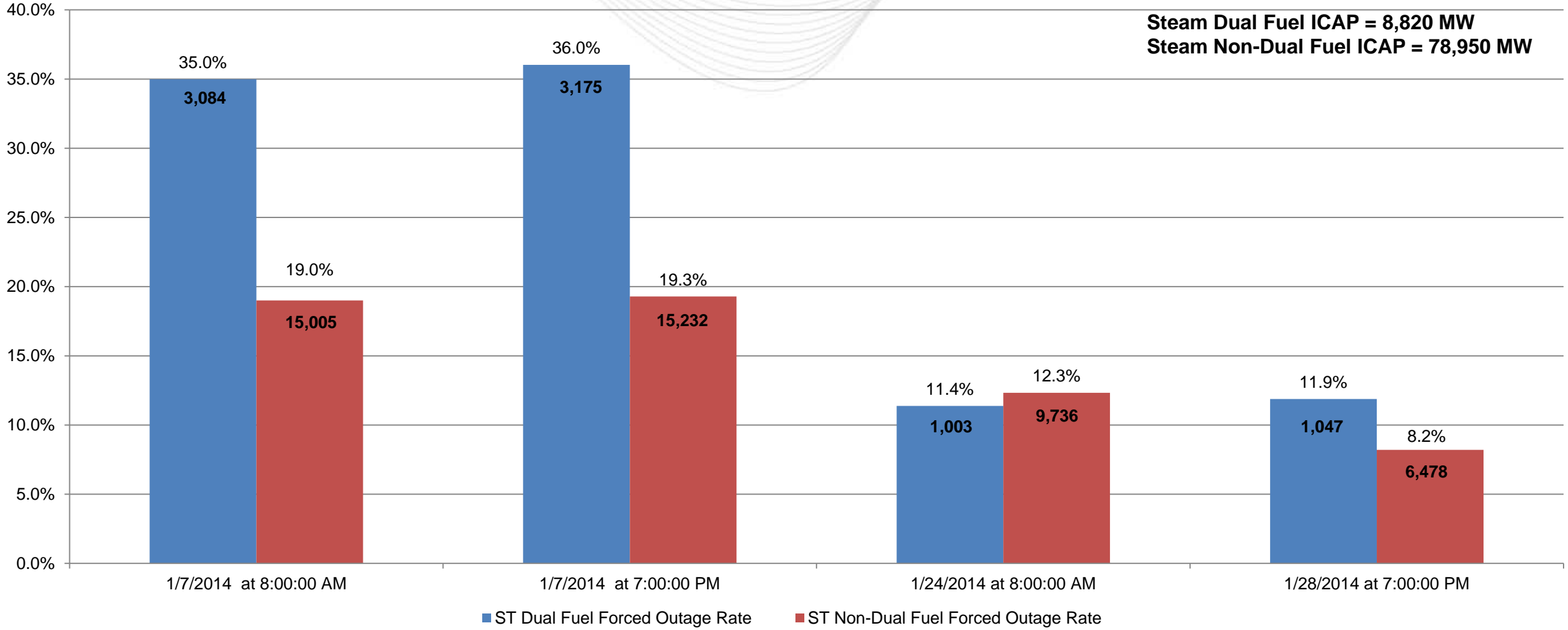


Dual Fuel vs Non-Dual Fuel Forced Outage Rates

CT Dual vs Non-Dual Fuel Forced Outage %

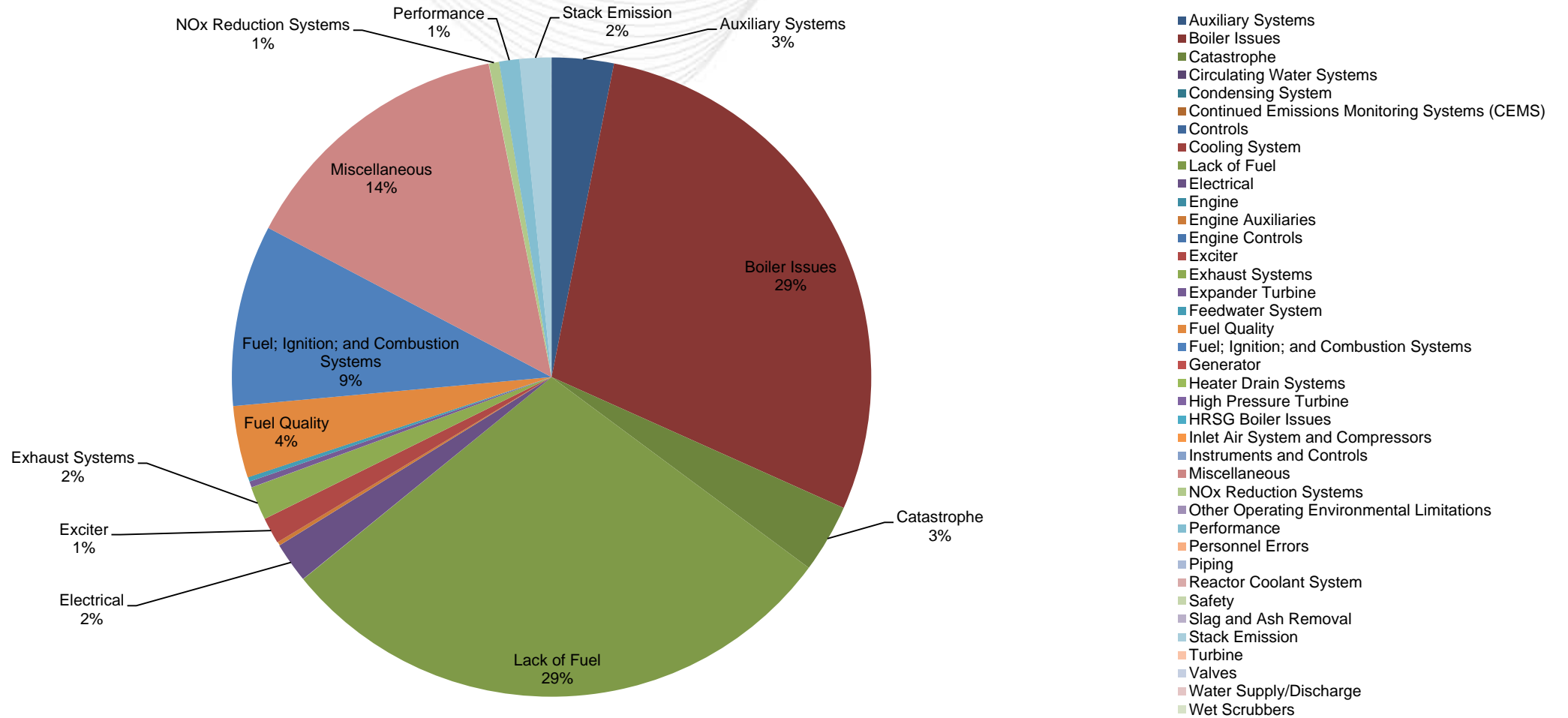


Steam Dual vs Non-Dual Fuel Forced Outage %



Dual Fuel Capable Unit Start Failure and Forced Outages

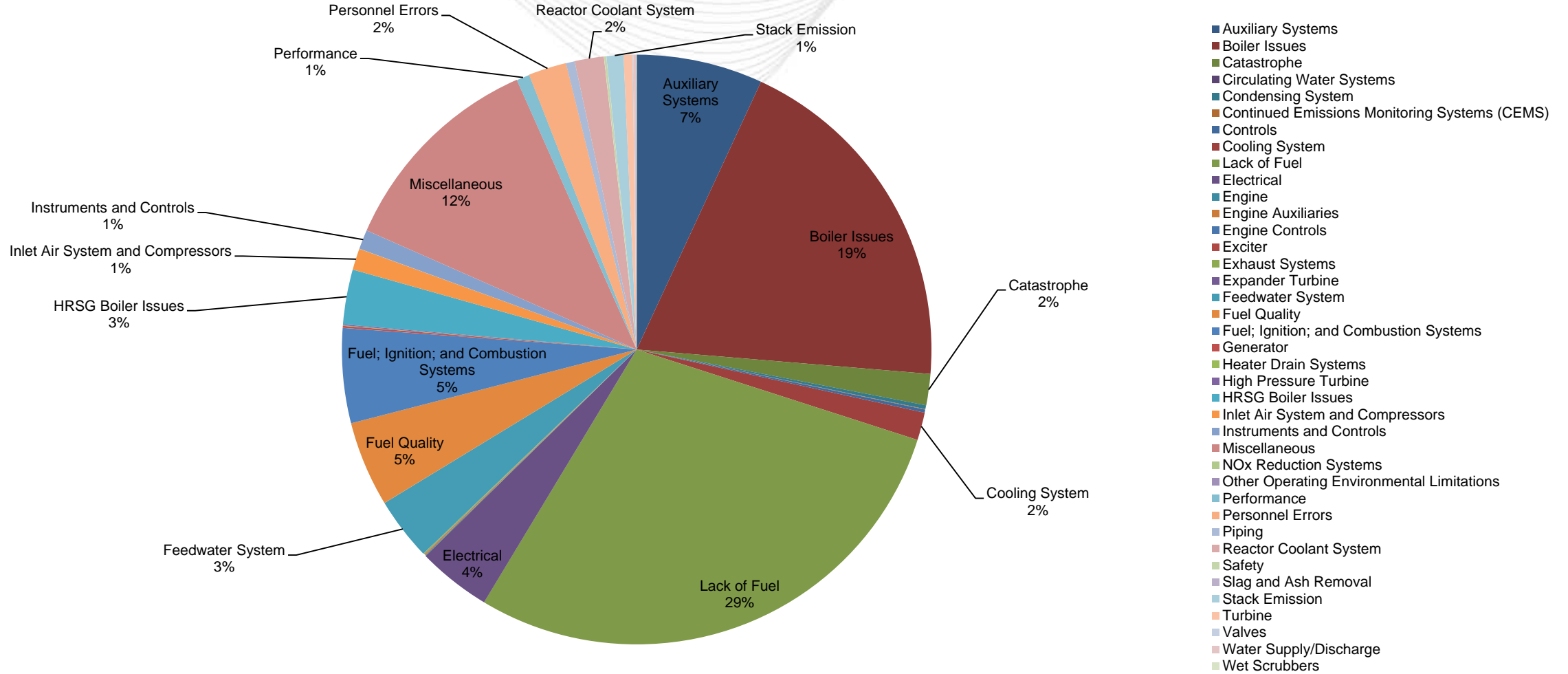
Dual Fuel Capable Start Failure and Forced Outage Causes on 1/7/2014 18:00 to 19:00



*Outage types that do not comprise at least 1% of the time period's total MW Reduction are not indicated.

Single Fuel Capable Unit Start Failure and Forced Outages

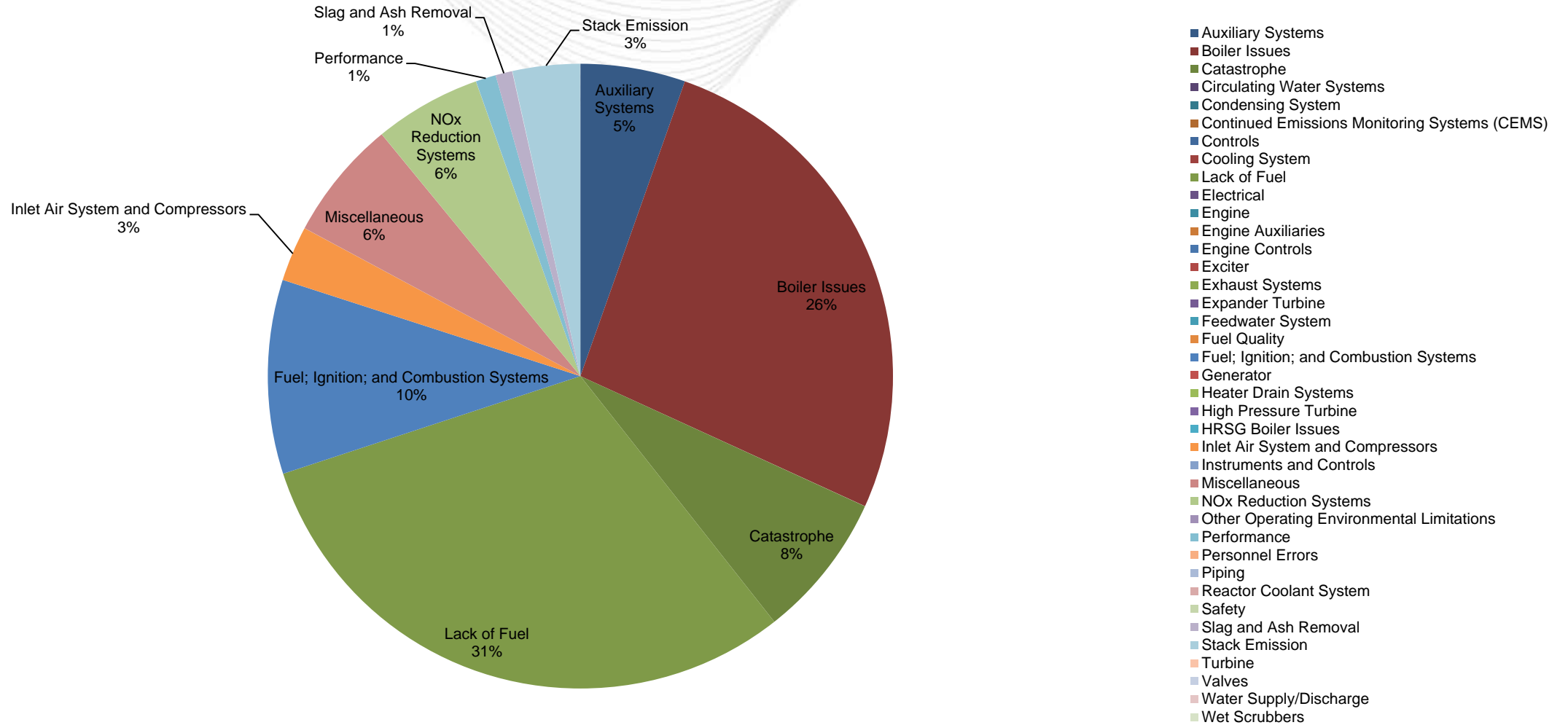
Single Fuel Start Failure and Forced Outage Causes on 1/7/2014 18:00 to 19:00



*Outage types that do not comprise at least 1% of the time period's total MW Reduction are not indicated.

Dual Fuel Capable Unit Start Failure and Forced Outages

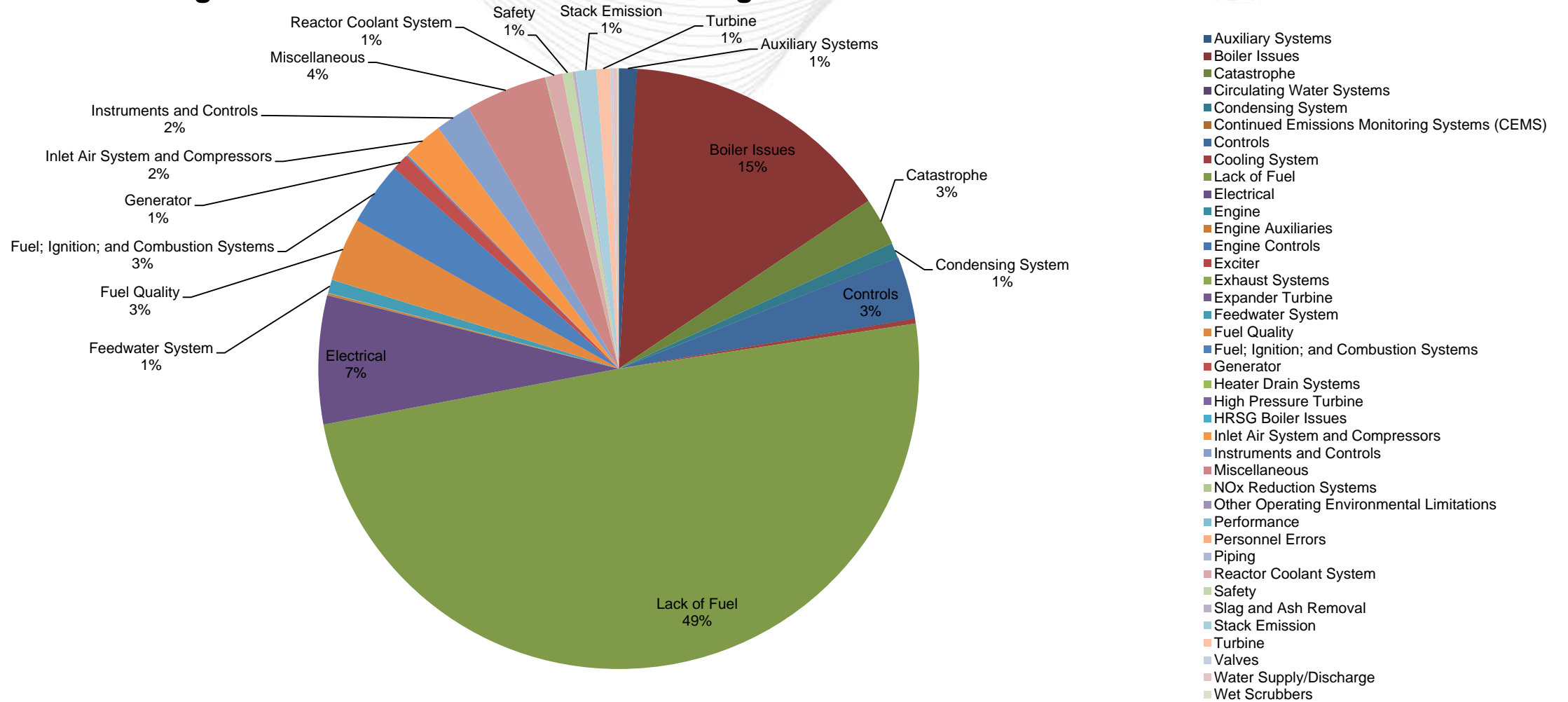
Dual Fuel Capable Start Failure and Forced Outage Causes on 1/28/2014 18:00 to 19:00



*Outage types that do not comprise at least 1% of the time period's total MW Reduction are not indicated.

Single Fuel Capable Unit Start Failure and Forced Outages

Single Fuel Start Failure and Forced Outage Causes on 1/28/2014 18:00 to 19:00



*Outage types that do not comprise at least 1% of the time period's total MW Reduction are not indicated.

% Winter Start Failure by Last Operation by Unit Type

