

# Wind Curtailment Statistics

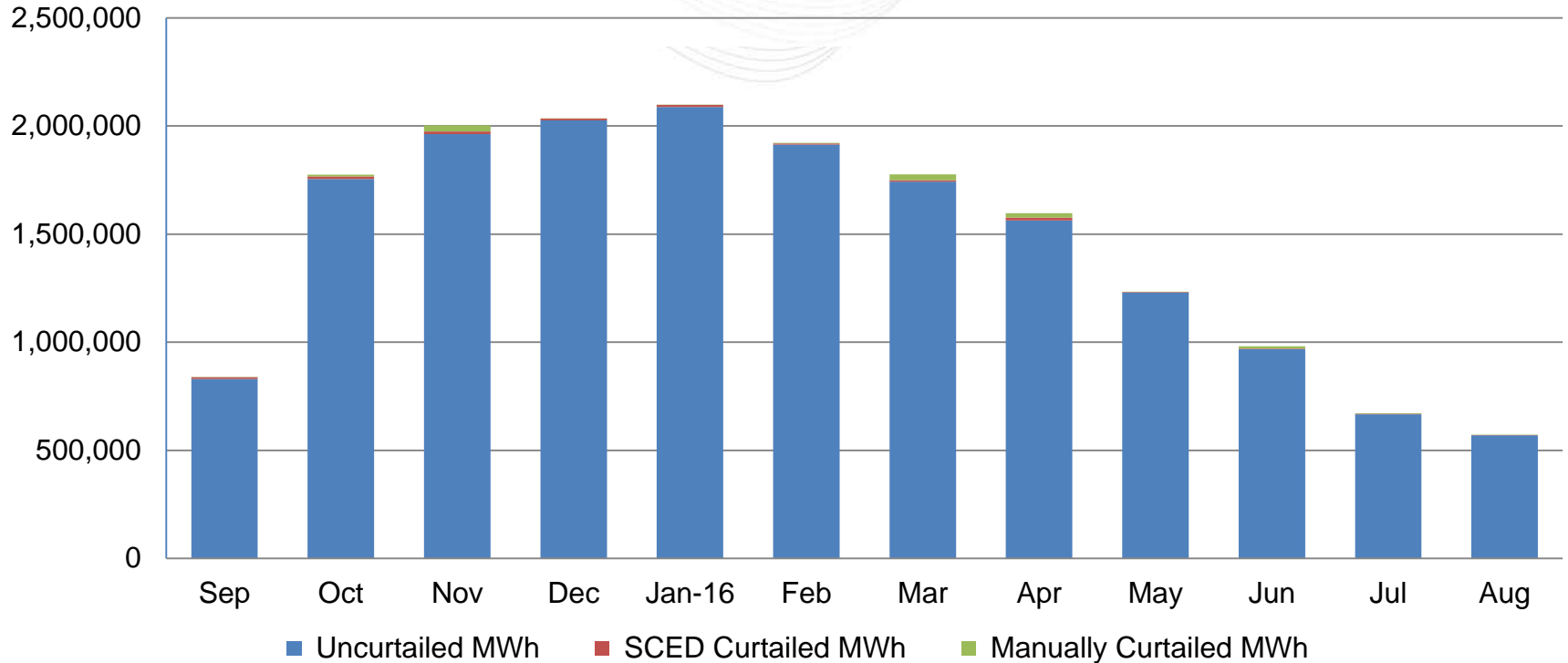
Ken Schuyler

Manager, Renewable Services

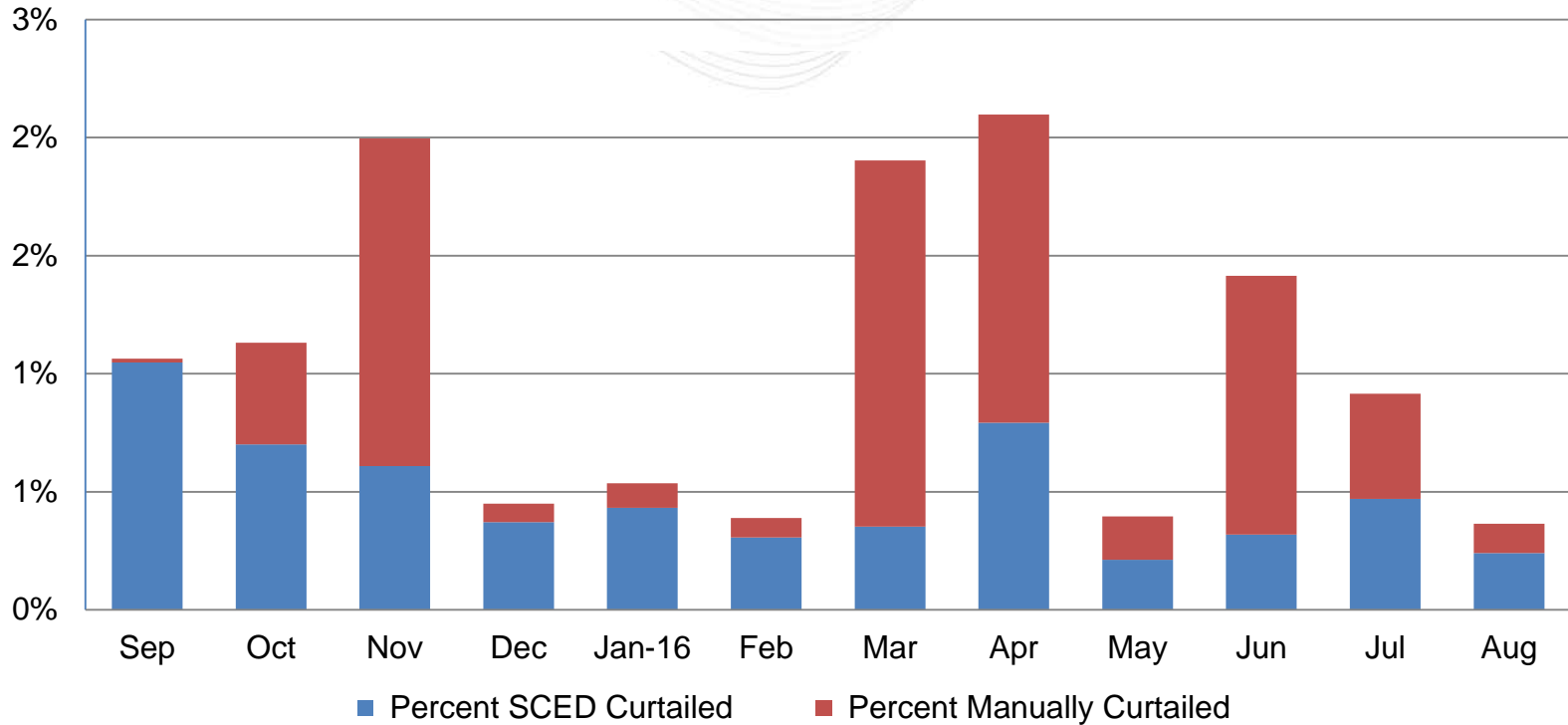
Intermittent Resources Subcommittee

September 19, 2016

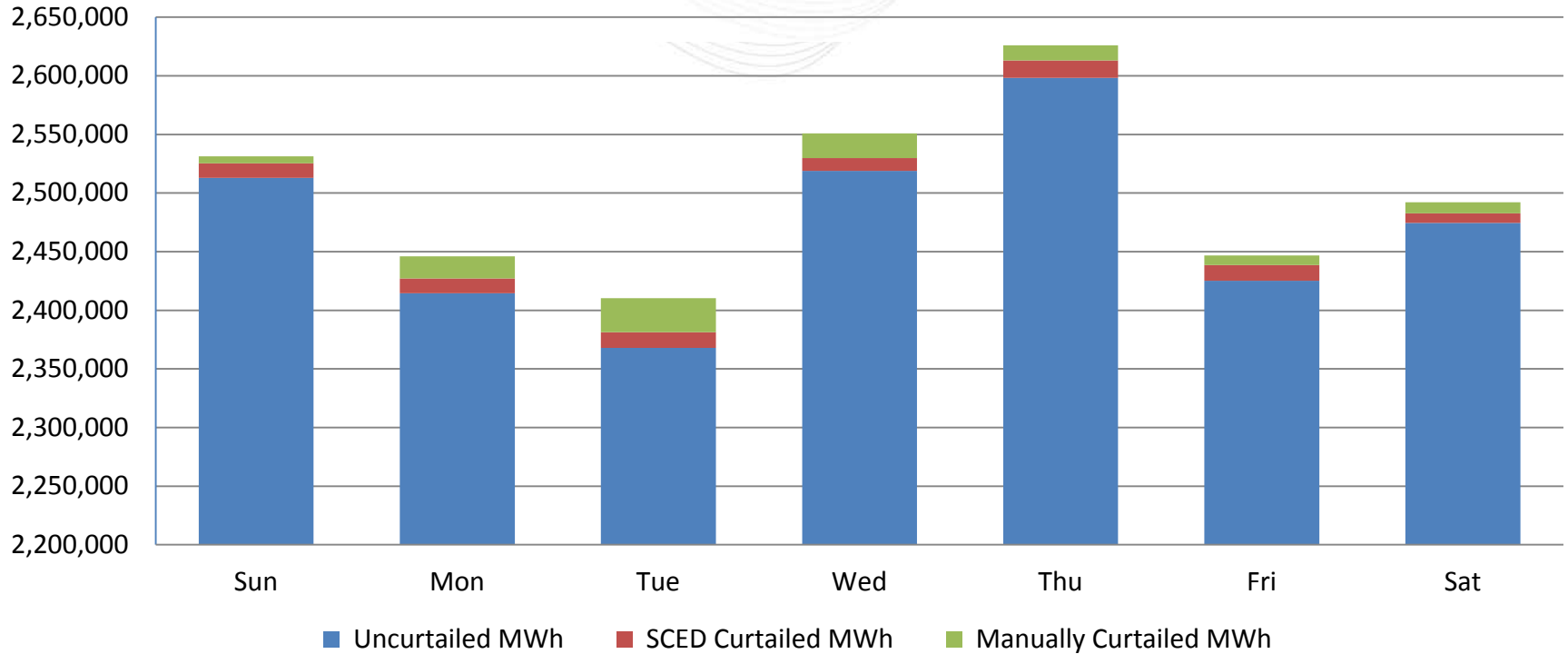
## Monthly Wind Power Generation and Curtailments



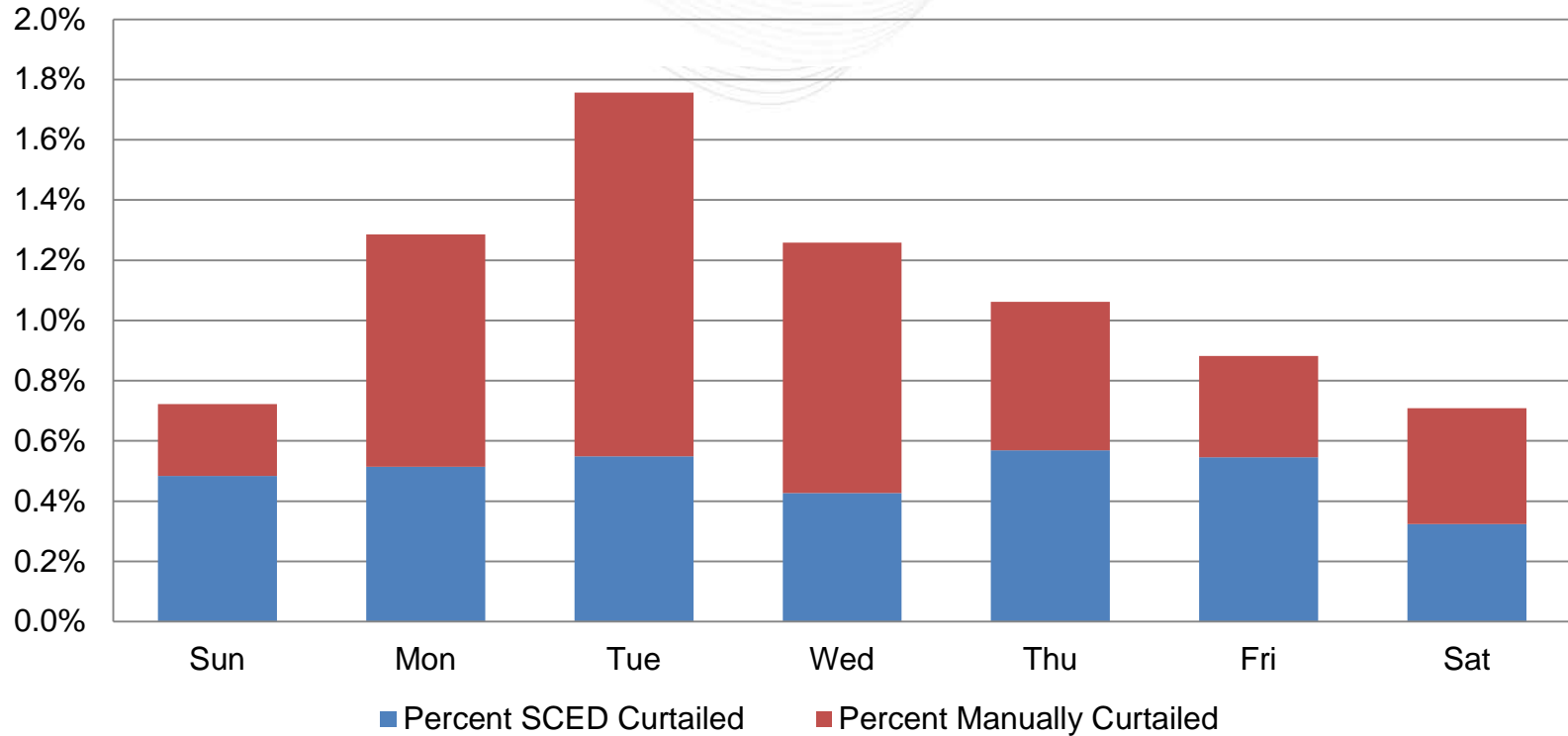
## Monthly Wind Power Curtailments



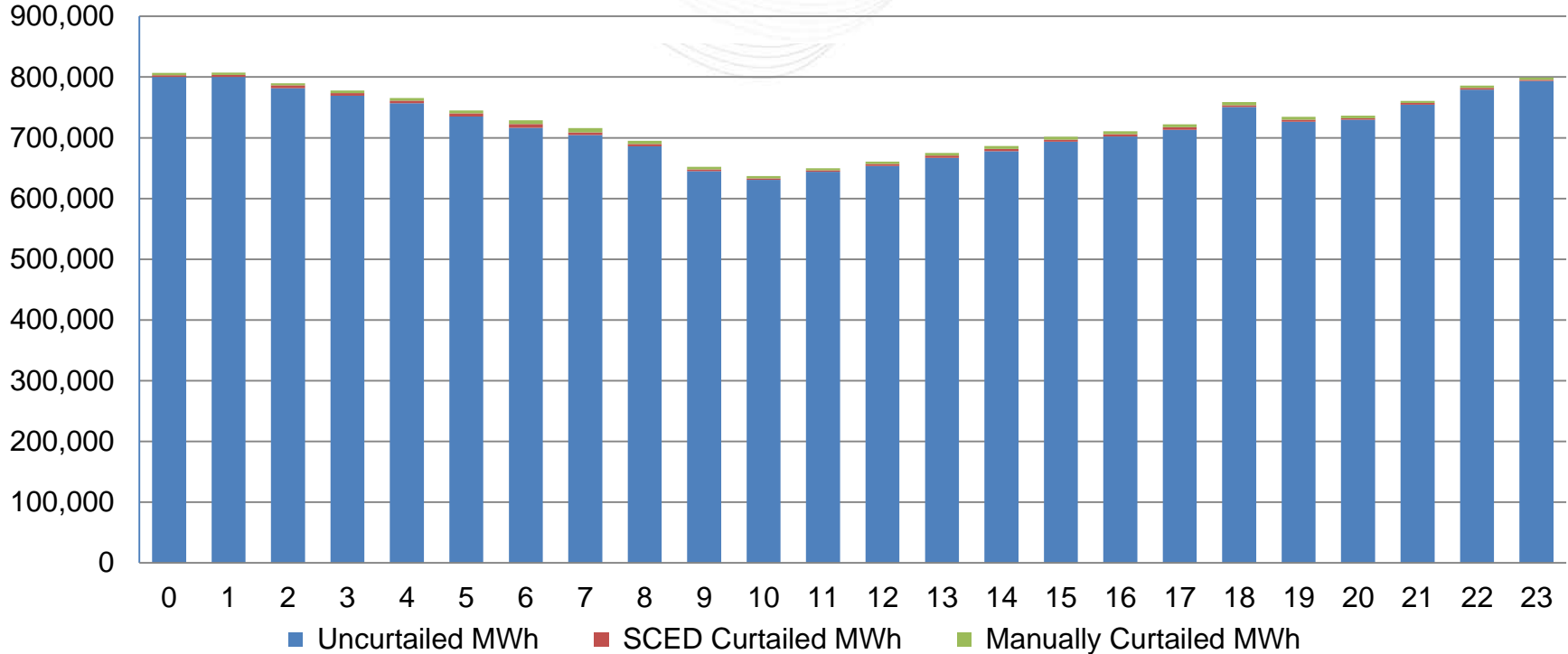
## Daily Wind Power Generation and Curtailments



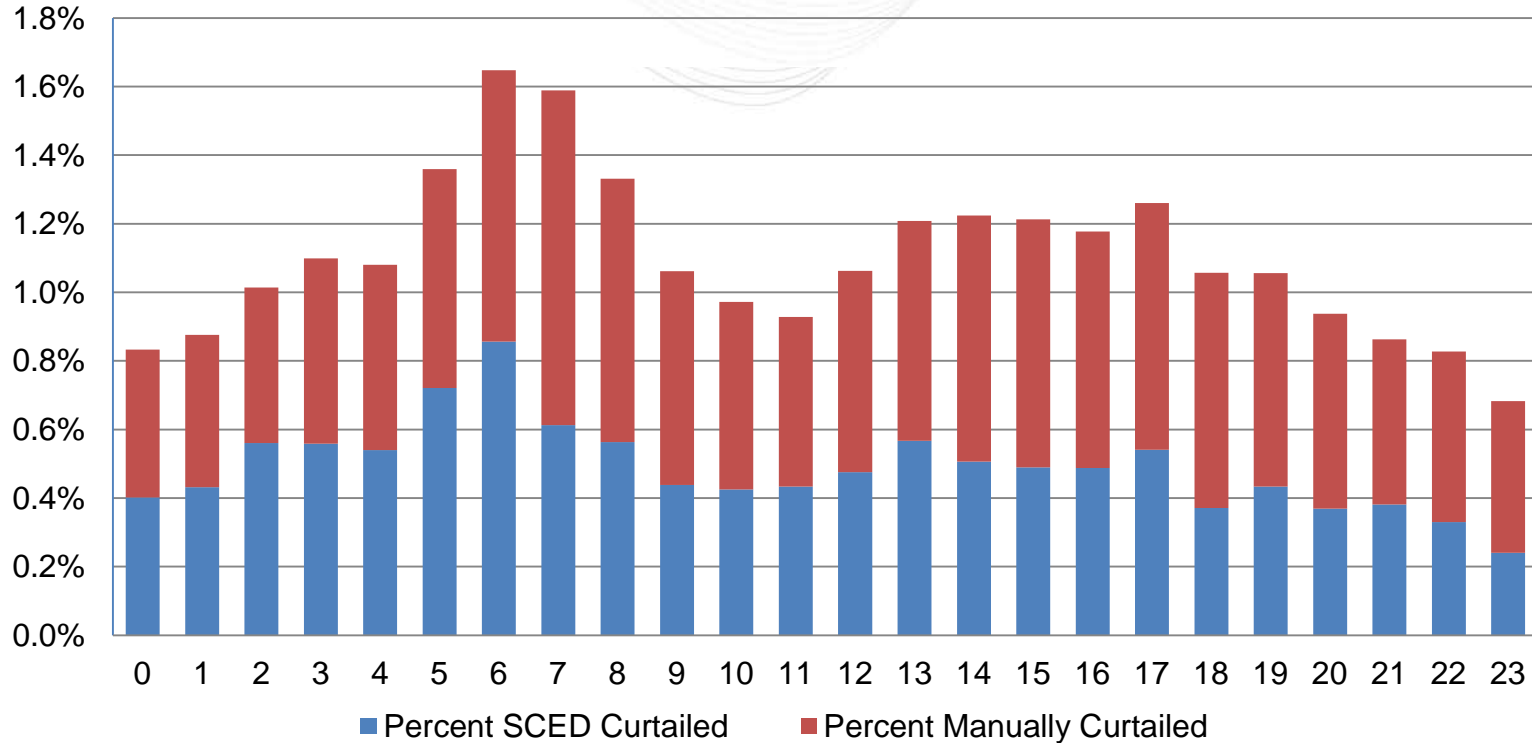
## Daily Wind Power Curtailments



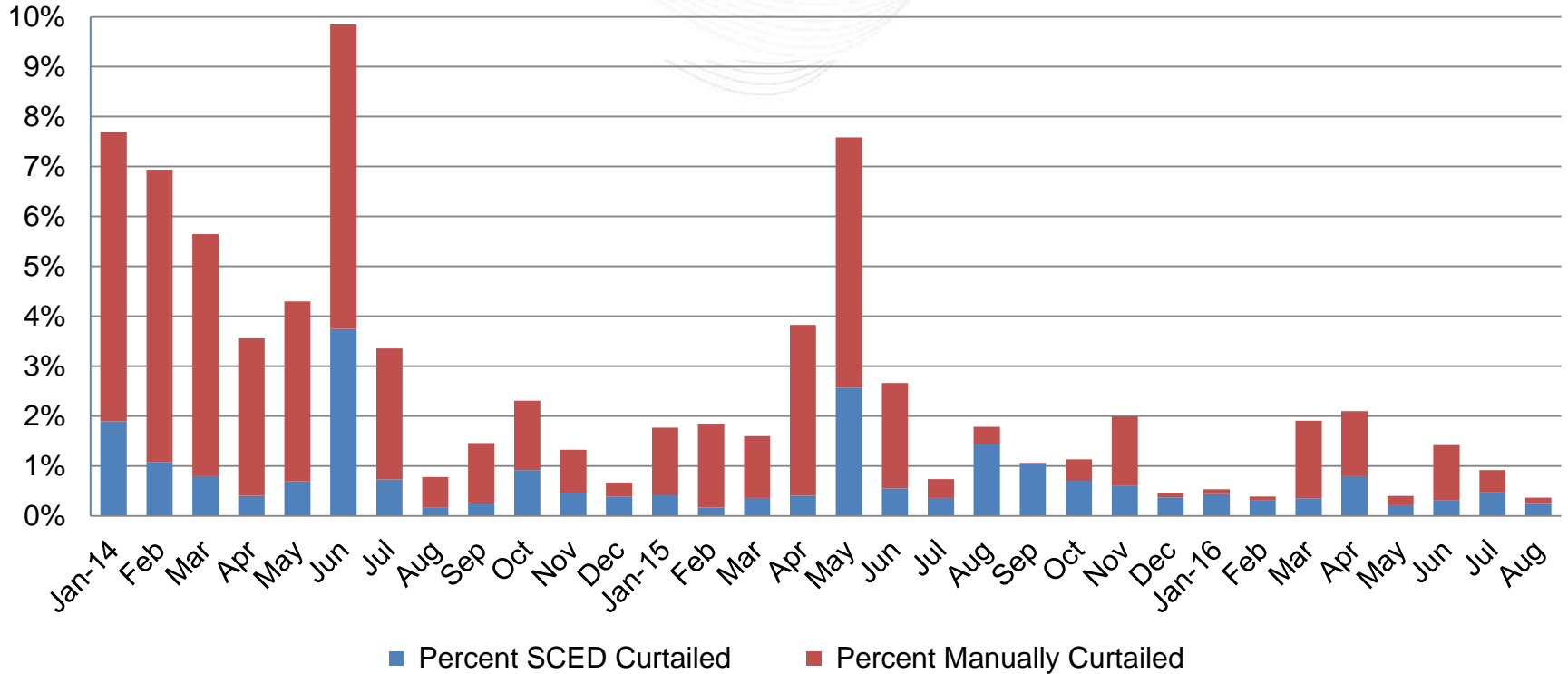
## Hourly Wind Power Generation and Curtailments



## Wind Power Gen - Percent Curtailed by Hour



## Monthly Wind Power Curtailments





	<b>TOTAL Curtailments</b>	<b>SCED Curtailments</b>	<b>MANUAL Curtailments</b>	<b>Manual Curtailments (percent of total)</b>
2014	4.1%	0.9%	3.2%	77.2%
2015	2.2%	0.7%	1.5%	69.2%
2016 (thru Aug)	1.0%	0.4%	0.6%	60.9%

- Wind power curtailments averaged **1.1%** for 12-month period ending Aug 2016.
- Comparing 2014 and 2015, wind generation increased 6.7%, but average wind power curtailments *declined* from **4.1%** in 2014 to **2.2%** in 2015.
- For the first eight months of 2016, wind power curtailments averaged **1.0%**.
- Manual curtailments are a decreasing percentage of total curtailments.
- Decreasing curtailments are likely attributable to:
  - Transmission system upgrades
  - Enhanced wind dispatch rules - wind farms following dispatch
  - Improved interregional coordination