
TVA Fossil Power Group Future Challenges and Opportunities

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TVA - Fossil Power Group



Our VISION



ONE OF THE NATION'S LEADING PROVIDERS OF LOW-COST
AND CLEANER ENERGY BY 2020



Low Rates



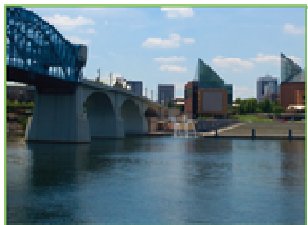
Cleaner Air



High Reliability



More Nuclear Generation



Responsibility



Greater Energy Efficiency

The FPG Approach to Meet the Vision

- Accountability
- Metrics and monitoring ... Everything
- Operational focus
- Adopting nuclear best practices into a fossil world
- Creating an Operating System ... Sustainability
- Teamwork
- Continuous Improvement

FPG Challenges

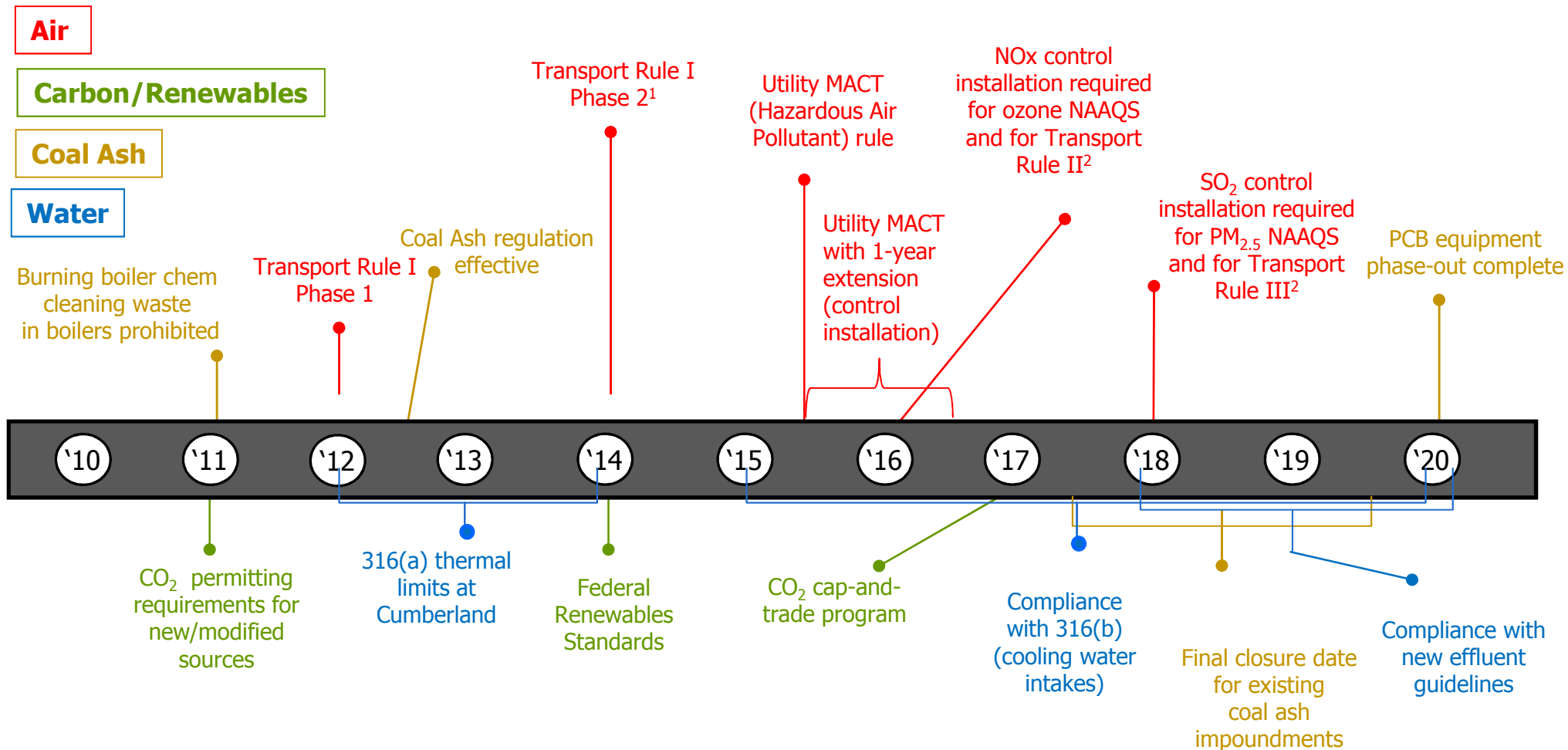
- Continued environmental regulatory uncertainty
- Determining the optimal portfolio mix
- Developing plans based on current assumptions, but acknowledging the need to remain flexible
- Improving equipment reliability and efficiency and implementing programs to sustain performance
- Integrating growing gas fleet

The Attack on Coal

Environmental regulations are continually changing and becoming more stringent:

- EPA is now expanding emphasis from primarily *Air* to also include *Water and Solid Waste from power generation sources*
- Economics may not be supportive of further environmental controls installation
 - Sub-Critical Units
 - >40 Years old
 - <200 MWE without current back-end controls
 - NPV is a driving factor
- Coal plant retirements and idling have already been announced by TVA and others . . . More to come

TVA Implementation Dates for Key Environmental Drivers



1. Transport Rule I phases' 1 and 2 apply to both SO₂ and NO_x, though only specified states require further SO₂ reductions in 2014.
2. EPA will revise the Transport Rule in conjunction with each future NAAQS reduction (i.e. Transport Rule II and Transport Rule III)

DRAFT

EPA Agreement

- Coal-fired utilities, including TVA, have been confronted with legal challenges specific to New Source Review (NSR)
- To provide a more certain business environment, TVA negotiated with EPA, four states and three environmental groups
- EPA Agreement was approved and signed April 14, 2011
- Past claims of NSR violations are resolved
- EPA will not enforce NSR for new TVA plant projects until 2020 (except for increases in carbon dioxide, sulfuric mist and, at some plants, particulate emissions)
- Lowers air emissions
- Aligned with TVA's Vision

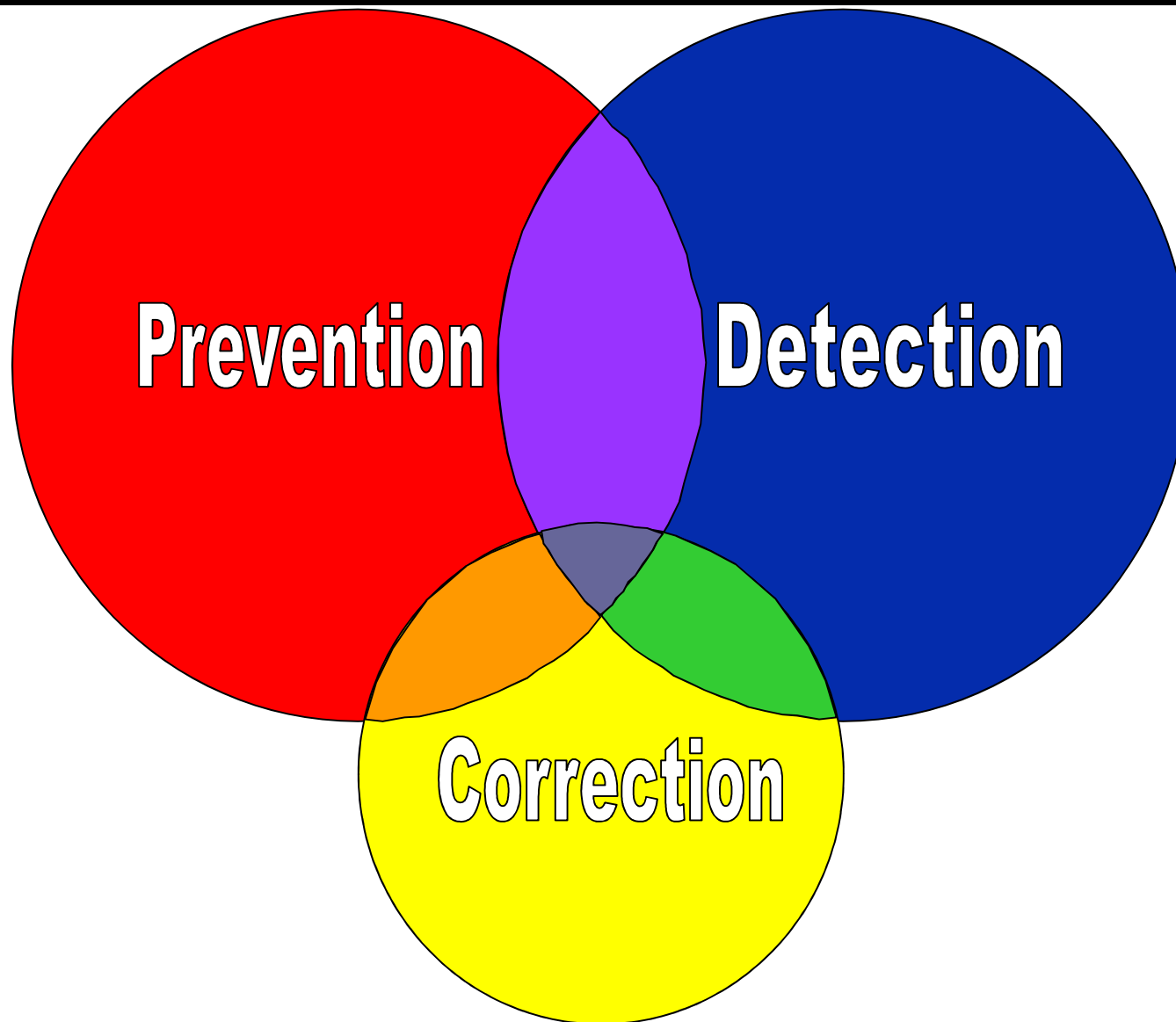
EPA Agreement Outcomes

- Retiring of JSF 1-4
- Retiring of JOF 1-10 and WCF 1-6
- Controlling, converting or retiring of ALF 1-3, GAF 1-4 and SHF 1 and 4
- Idling with options to control , convert or retire COF 1-5
- Continuous operation of all existing environmental controls
 - Excludes periods of malfunction, phasing in controls per manufacturer specifications, and normal maintenance
- Operating constraints for KIF
 - BRF must be dispatch prior until gypsum pond repair
 - TDEC variance granted to run KIF
- Install Particulate Matter CEMs at PAF U3, BRF U1, COF U5, each flue at KIF and SHF U1-5

Key Decision Making Pertaining to the Coal Fleet

- Portfolio optimization study
- System turndown evaluation
- Fossil multi-media environmental compliance plans
- Coal unit group ranking
- Equipment short and long term lay-up procedure
- Lead member in EPRI plant lay-up guideline

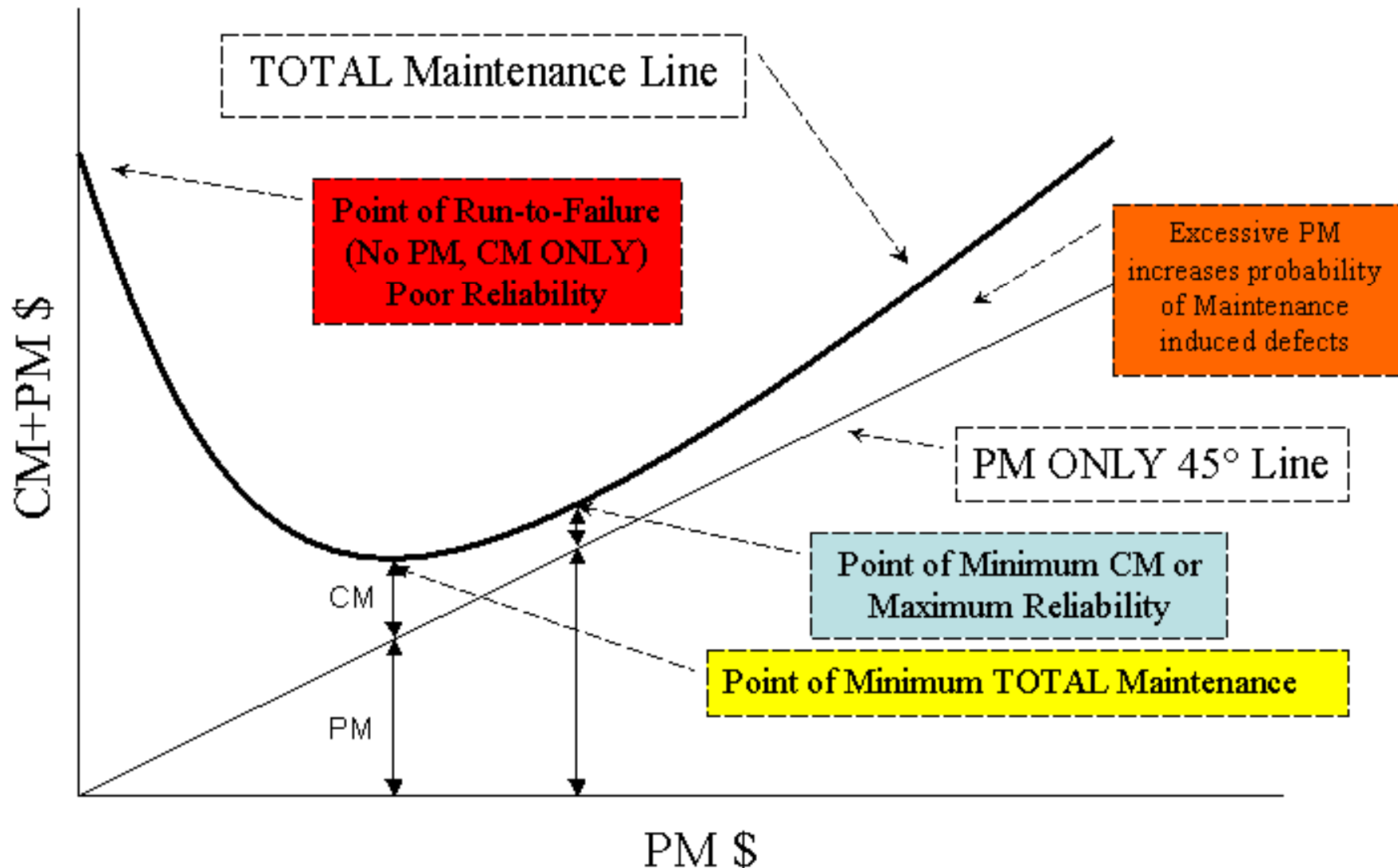
High Levels of Equipment Reliability



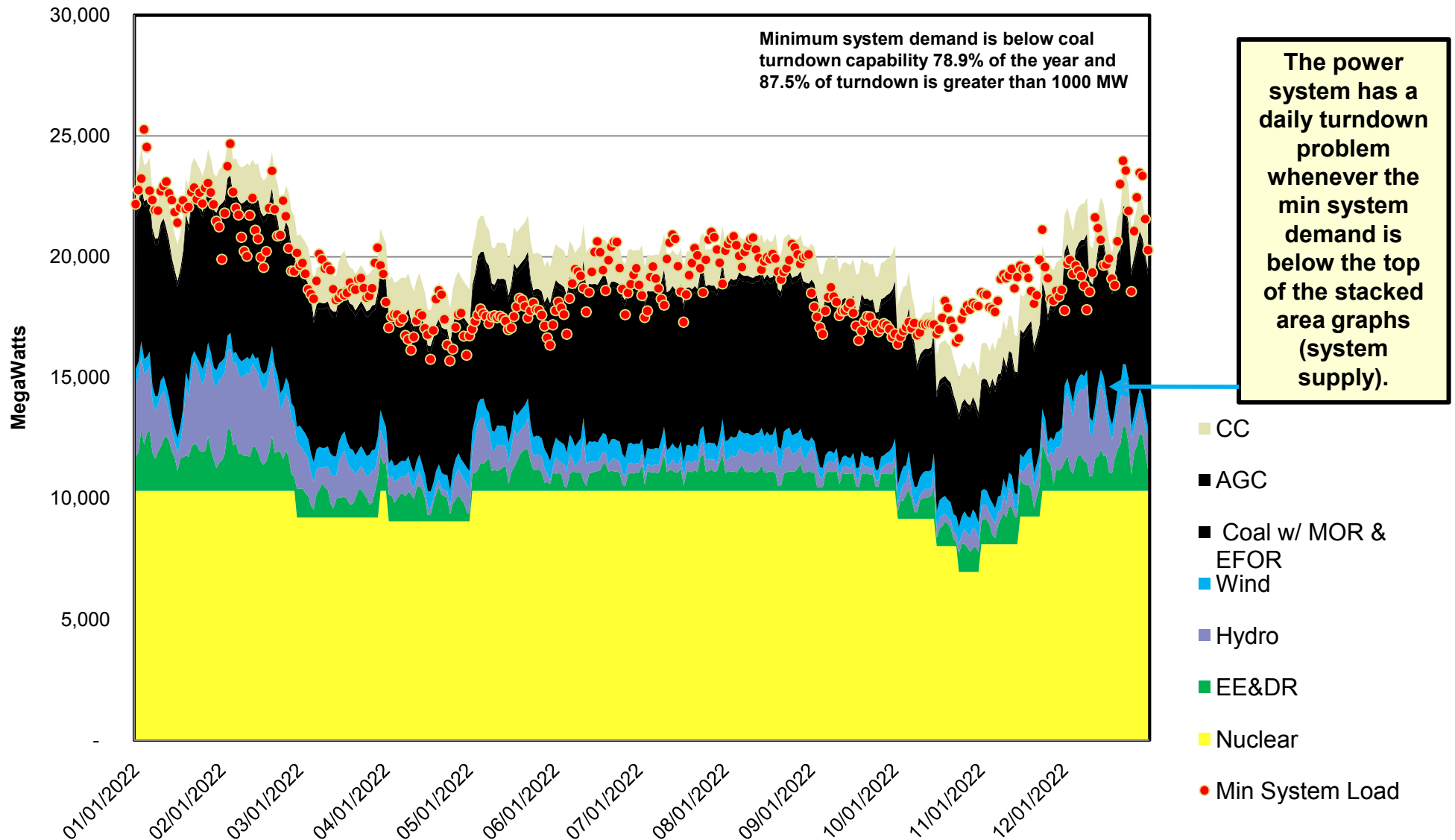
GOAL: Maximize time spent on prevention and detection to minimize/eliminate corrective actions

Preventive Maintenance

Maximum Reliability is always achieved at a Higher Cost than the Minimum Total Maintenance Cost



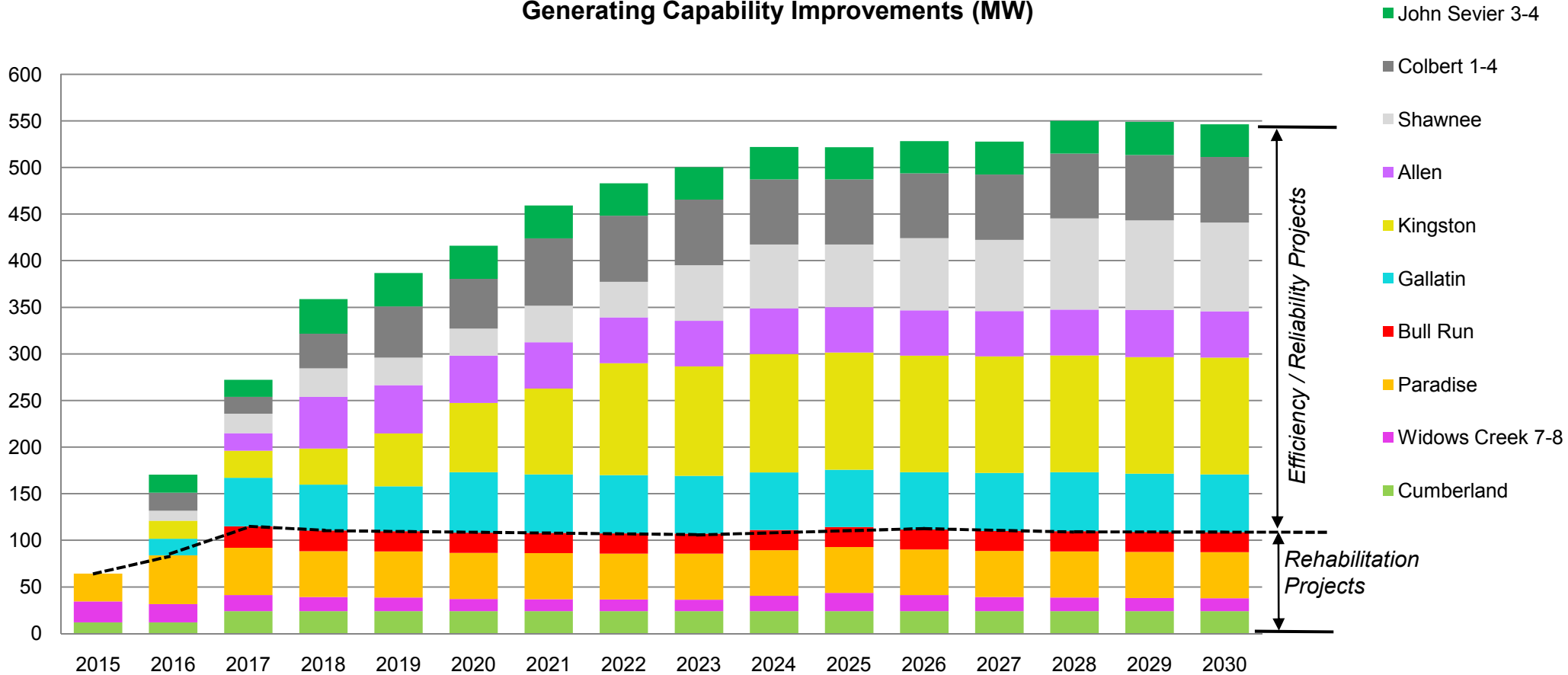
Minimum System Demand vs. Capacity Year 2022



- Year 2022 projection of ~\$190M/yr increased cost due to up to 780 more coal unit restarts to meet reduced flexibility in the system

Coal Turbine Rehabilitation and Generating Capability Improvement

Generating Capability Improvements (MW)



FPG Opportunities

- Expanding Gas Fleet Capacity
- Increasing Competitive Advantage with PSS and ESS
- Improving Material Condition of Assets
- Improving Energy Efficiency and Fuel Flexibility
- Reducing House Loads
- Reducing Human Performance Events
- Continuing Employee Engagement and Support
- Becoming an Industry Leader via Performance and EPRI Involvement

FPG Challenges

