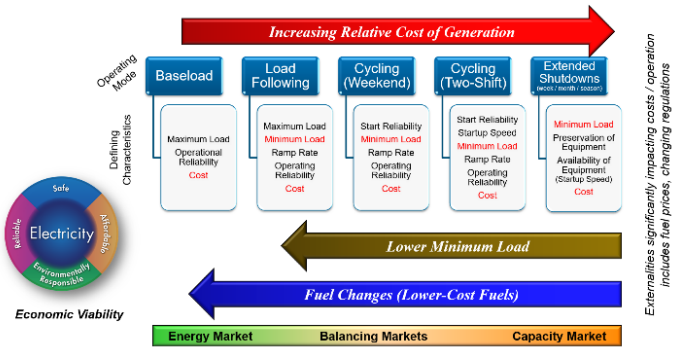
# Tools for Managing Flexible Operation of Power Plants




*Enabling Flexible Operation of Power Plants*

- Comprehensive resources for managing flexible operation
- Improved safe, reliable, affordable, environmentally responsible flexible operation
- Strategies for maintaining economic viability
- Access to collective knowledge of industry about unit level design/mission technical issues
- Access to database of unit-level vulnerabilities, field-proven options for resolution, and technical references

## Key Research Question

Flexible operation of power generation units adds significant complexity to the operation and maintenance (O&M) of a power plant. A spectrum of flexible operation modes may be needed to incorporate new or increasing renewable generation including extended shutdown, daily on/off operation, weekly on/off operation, daily cycling to minimum loads, fuel switching, etc. Each one of these modes of operation may have a different impact on the equipment within a power plant. Operating practices, maintenance strategies, and virtually all aspects of the plant activities must be optimized for a plant to fulfill these requirement, while remaining economically viable. Identification and application of solutions for these issues involves a comprehensive and holistic perspective of the unique impacts to components and systems of the plant under various modes of flexible operation.

## Objective

The objective of this project is to provide a set of tools in the form of information sharing for plant operators to identify the ideal technical solutions for their plants for flexible operation.

The need for flexible operation is balanced against asset integrity risks. More flexible operation is always possible but with more flexible operation comes new asset integrity risks which must be managed. Ultimately this project seeks to provide power plant operators with the right tools and resources to assess and implement technologies and strategies to optimize their operational flexibility within their acceptable asset integrity risk across their fleet of generating plants. Power plant fleets can be optimized and modernized to enable safer, more reliable, more affordable, and more environmentally responsible flexible generation of electricity.

## Approach

EPRI's Mission Profile Working Group (MPWG) (Project ID 1-107140) launched in 2015, created a set of working groups to provide high-value collective knowledge as a resource for members to manage flexible operation of power plants. This project extends the MPWG to develop and enhance those resources for use by power plants and fleet operators.

**Forums, Webcasts and Workshops.** The first aspect of this project is to provide forums for sharing best practices and technology implementation examples for flexible operation. The main forum is an annual flexible operation conference that features relevant and high-value presentations by EPRI, stakeholders, government and vendors. Additionally, the project will conduct webcasts and workshops throughout the year on flexible operation.

**Databases and Best Practice Guidance.** The website flexops.epri.com is a clearinghouse repository of accumulated unit and mission specific information of flexible operation of power plants. The website contains information and solutions associated with different modes of flexible operation by asset class, component and systems. The website will be updated and curated by the work done in this project.

**Technology Transfer.** This project requires interaction with relevant operating, OEM, and third-party suppliers to identify solutions and issues associated with flexible operation of power plants. Webcasts, workshops, and meetings will be used to facilitate this.

## Research Value

The industry is entering a critical period of changes in the operation of the generation fleet. The pace of change requires that industry experience, a systematic and integrated process, broad consensus expert judgment, and research is needed to address, support, and sustain a new mission for many of the existing generation assets. The project is designed and operated to fulfill this requirement, with a concerted effort to maintain and keep relevant the work initiated by the MPWG.

## Deliverables

It is anticipated that the following products will be maintained and executed:

- Annual Power Plant Flexibility Conference, periodic webinars and updates
- Access to the flexops.epri.com web resource database of issues and technical solutions for flexible operation
- Tech Transfer via webcasts, workshops, and meetings

Funders will have access to the specific deliverables developed and access to flexops.epri.com during each year of participation.

## Price of Project

This supplemental project is offered on an annual basis of $20,000/year. Previous funders of the MPWG will maintain access to flexops.epri.com with or without participation in this project. This project qualifies for Tailored Collaboration (TC) and Self-Directed Funding (SDF).

## Project Schedule

The project is offered on an annual basis.

## Who Should Join

Companies who need flexible operation solutions for their power plants and fleets of power plants, particularly those maintaining conventional thermal power plants and combined cycle power plants, will benefit from participation in this project.

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## Contact Information

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