



# Planning for Distributed Energy Resources (DERs)

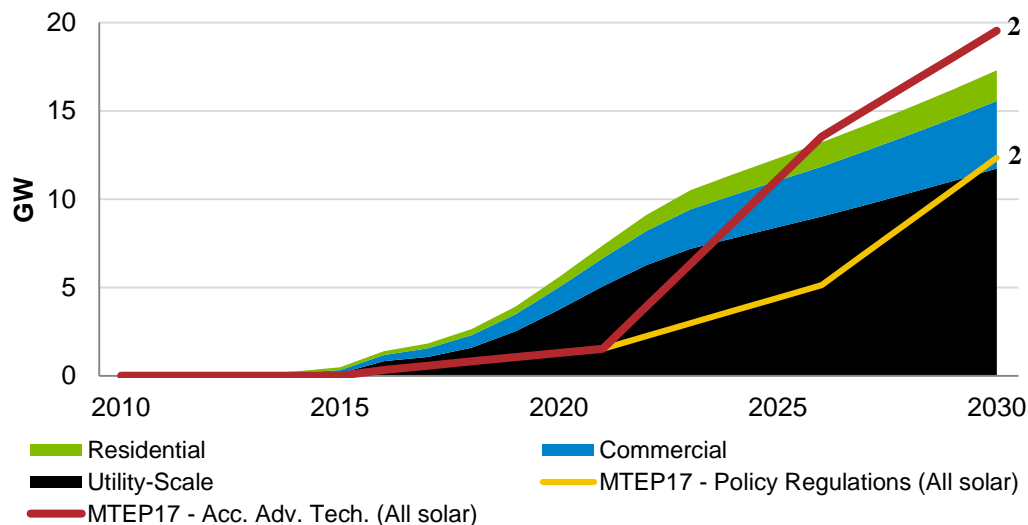
November 20, 2017

# Emerging technologies and new base load gas are gaining interest; economics will likely impact rate of adoption in MISO



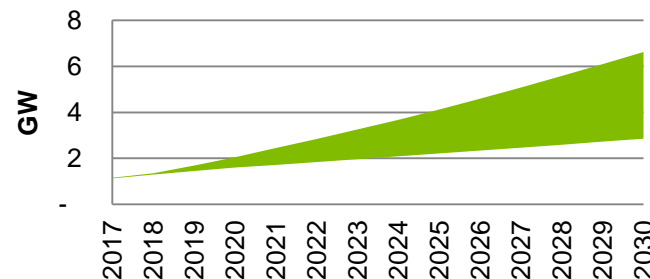
# Significant new DERs are forecasted – external forces could accelerate pace of change

## Installed PV in MISO by Segment<sup>1</sup>

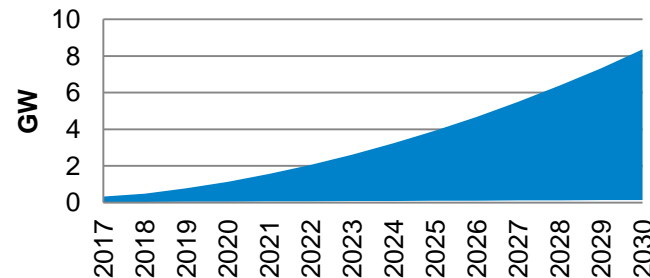


Utility scale PV represents majority of growth

## Possible Range of DR Deployment<sup>2</sup>



## Possible Range of EE Deployment<sup>2</sup>



# MISO is exploring the implications associated with DERs

In Motion

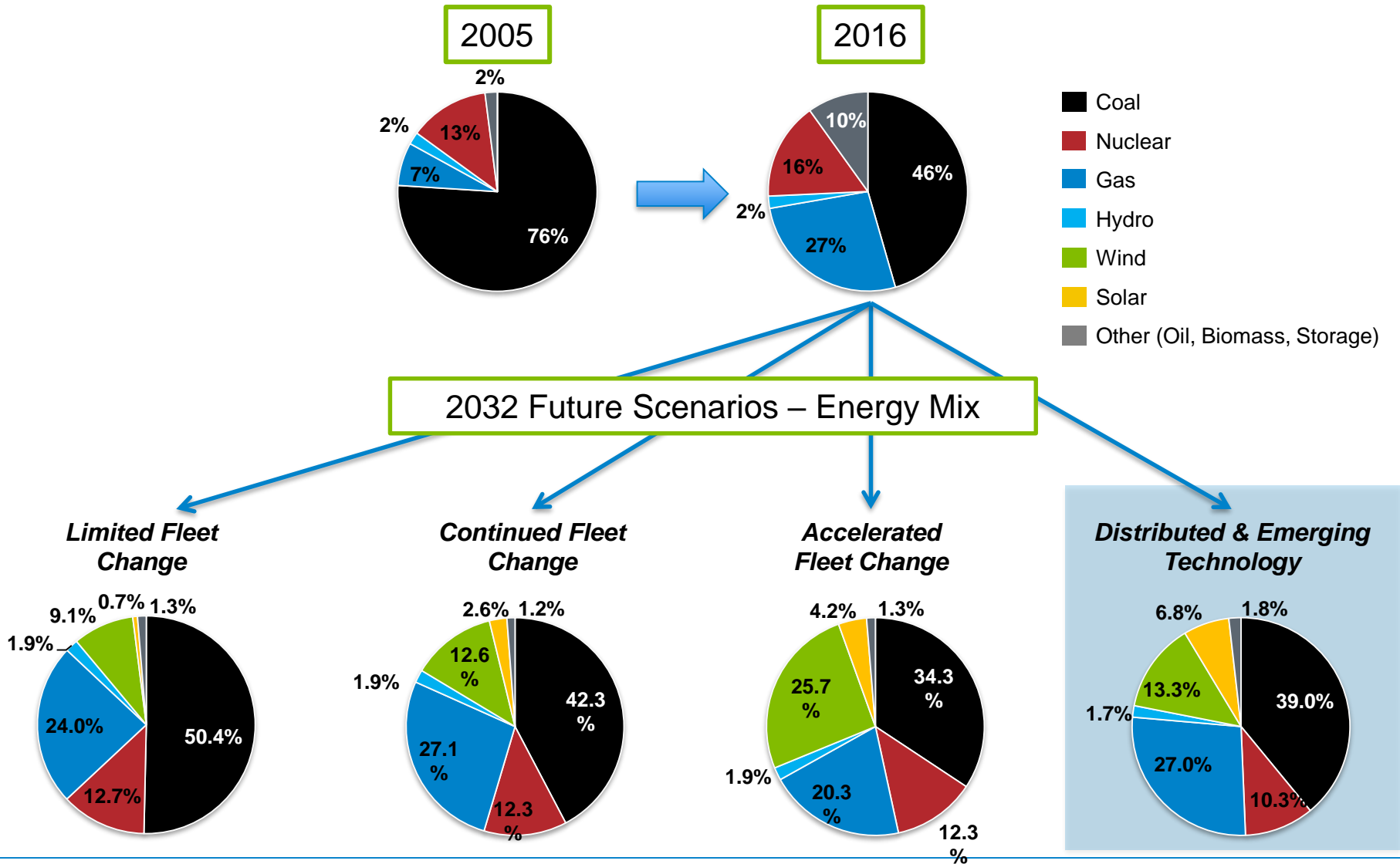
OMS &  
MISO  
engagement

Develop  
common  
definition

Plan futures  
incorporating  
DER

Conduct  
Implications  
study

# MISO's Generation Portfolio Evolution



# MISO continues to find opportunities to evaluate DERs in planning, markets and operations



## Planning

DERs will need to be modeled separately from traditional interconnected generating resources



## Markets

New products will be needed for re-dispatch of DERs and to reflect growth of zero marginal cost supply



## Operations

Short term net load requirements at the distribution level will change. RTOs will need to provide enhanced reliability