PROPOSED MTEP-12 FUTURES MATRIX

Uncertainty	Unit	Low (L)	Mid (M)	High (H)
Alternative Capital Costs*				
Coal	($/KW)	2,275	2,844	3,413
CC	($/KW)	802	1,003	1,204
CT	($/KW)	532	665	798
Nuclear	($/KW)	4,268	5,335	6,402
Wind-Onshore	($/KW)	1,950	2,438	2,926
IGCC	($/KW)	2,577	3,221	3,865
IGCC w/ CCS	($/KW)	4,278	5,348	6,418
CC w/ CCS	($/KW)	1,648	2,060	2,472
Pumped Storage Hydro	($/KW)	4,476	5,595	6,714
Compressed Air Energy Storage	($/KW)	1,000	1,250	1,500
Photovoltaic	($/KW)	4,322	5,403	6,484
Biomass	($/KW)	3,088	3,860	4,632
Conventional Hydro	($/KW)	2,461	3,076	3,691
Wind-Offshore	($/KW)	4,780	5,975	7,170
Distributive Generation-Peak	($/KW)	1,402	1,753	2,104
Demand and Energy				
Demand Growth Rate	%	0.71%	1.41%	2.12%
Energy Growth Rate	%	0.84%	1.67%	2.51%
Demand Response Level	%		GEP Estimates	
Energy Efficiency Level	%		GEP Estimates	
Fuel Prices (Starting Values)				
Gas	($/MMBtu)	3.50	5.00	8.00
Oil	($/MMBtu)	Powerbase default - 20%	Powerbase default	Powerbase default + 20%
Coal	($/MMBtu)	Powerbase default - 20%	Powerbase default	Powerbase default + 20%
Uranium	($/MMBtu)	0.92	1.14	1.36

Fuel Prices (Escalation Rates)				
Gas	%	1.74	2.91	4.00
Oil	%	1.74	2.91	4.00
Coal	%	1.74	2.91	
Uranium	%	1.74	2.91	
Emissions				
SO_2	($/ton)	Powerbase Default - 25%	Powerbase Default	Powerbase Default +25%
NOx	($/ton)	Powerbase Default - 25%	Powerbase Default	Powerbase Default +25%
CO_2	($/ton)	0	50	100
HG	($/ton)		60,000,000	72,000,000
Economic Variables				
Inflation Rate	%	1.74	2.91	4.00
Renewable Penetration as a Percentage of Total Energy Delivered				
State mandates	%	Use existing state requirements in the MISO footprint	Use exisiting standards or pending proposals / goals	
National	%	0	20% by 2025	30% by 2030
Coal Retirements from Baseline Level				
Potential Coal Retirements (EPA Compliance Driven - also reduces CO2 emissions)	%	0	EPA Study Mid Level of Retirements (12.6GW)	EPA Study High Level of Retirements (23GW)

*All costs are in Quarter 4, 2011 dollars

Future	Definition
Business as Usual	Considers the status quo scenario and continues the economic downturn which affects the growth in demand, energy and inflation rates.
Historical Growth	Considers a quick recovery from the economic downturn in demand and energy projections. This scenario models the power system as it exists today with reference values and trends with the exception of demand and energy growth rates.
Combined Policy (Federal RPS + Smart Grid + Carbon Cap + Electric Cars)	Combines the impact of multiple future policy scenarios into one future. Smart grid is modeled within the demand growth rate and it is assumed that an increased penetration of smart grid will lower the overall growth of demand. Electric vechicles are modeled within the energy growth rate and is assumed to increase the off-peak energy usage and as such increase the overall energy growth rate.
MISO-SPP Joint Future	This future is a placeholder for the MISO-SPP joint future development.

Demand Response Program	Description
Commercial and industrial (C&I) curtailable/interruptible tariffs	Curtailable programs are those in which a customer commits to curtailing a certain amount of load whenever an event is called in exchange for lower energy price. Interruptible programs are programs in which a customer agrees to be interrupted in exchange for a fixed reduction in the monthly demand billing rate. If a customer does not reduce their load per their commitment, the utility may levy a penalty.
C&I direct load control (DLC)	These programs are where the C&I customer agrees to allow the utility to directly control equipment such as an air conditioner or hot water heater during events in exchange for a payment of some type (a flat fee per year or season and/or a per-event payment). A controlling device such as a switch or programmable thermostat is required.
C&I dynamic pricing	Dynamic pricing programs are structured so that customers have an incentive to reduce their usage during times of high energy demand or high wholesale energy prices. Under a critical peak pricing program, the customer pays a higher electricity rate during critical peak periods and pays a lower rate during off-peak periods. Often times, a critical peak pricing rate is combined with a time-of-use rate. Under a peak-time rebate program, the customer receives an incentive for reducing load during critical peak periods, and there is no penalty if the customer chooses not to participate.
Residential DLC	These programs are where the residential customer agrees to allow the utility to directly control equipment such as an air conditioner or hot water heater during events in exchange for a payment of some type (a flat fee per year or season and/or a per-event payment). A controlling device such as a switch or programmable thermostat is required.
Residential dynamic pricing	Dynamic pricing programs are structured so that customers have an incentive to reduce their usage during times of high energy demand or high wholesale energy prices. Under a critical peak pricing program, the customer pays a higher electricity rate during critical peak periods and pays a lower rate during off-peak periods. Often times, a critical peak pricing rate is combined with a time-of-use rate. Under a peak-time rebate program, the customer receives an incentive for reducing load during critical peak periods, and there is no penalty if the customer chooses not to participate.
Energy Efficiency Program	**Description**
Residential Energy Efficiency Programs*	Appliance incentives/rebates; Appliance recycling; Lighting initiatives; Low income programs; Multifamily programs; New construction programs; Whole home audit programs; All other residential programs
Commercial and Industrial Energy Efficiency Programs*	Lighting programs; Prescriptive rebates; Custom incentives; New construction programs; Retrocommissioning programs; All other C&I programs

* Note: Both Residential and Commercial & Industrial EE programs are split into low and high cost blocks for EGEAS modeling purposes; the cutoff is $1,000/k