

A Brief Overview of DEF Planning

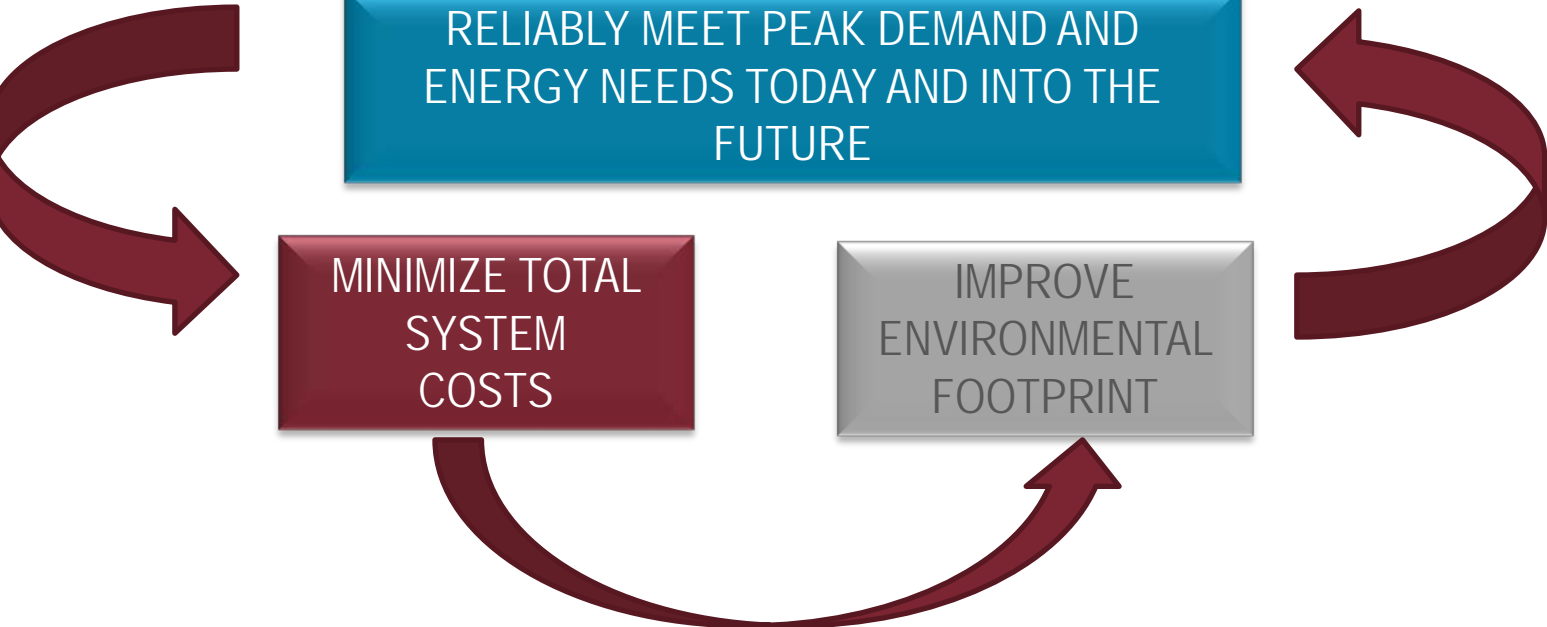


PRIMARY PLANNING OBJECTIVES

RELIABLY MEET PEAK DEMAND AND
ENERGY NEEDS TODAY AND INTO THE
FUTURE

MINIMIZE TOTAL
SYSTEM
COSTS

IMPROVE
ENVIRONMENTAL
FOOTPRINT

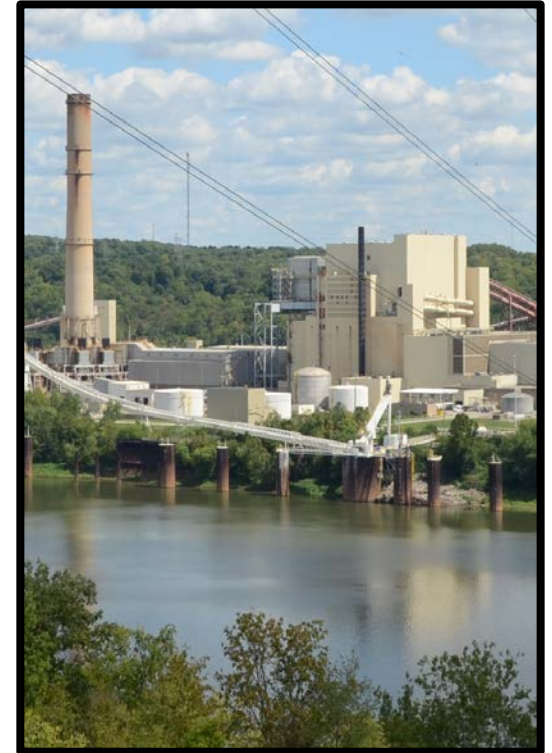




- Changes in Load Forecast
- Change in Reserve Needs

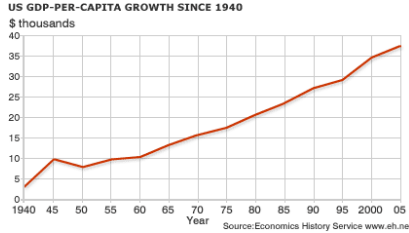
- Plant Retirement
- Purchase Contract Expiry

- Load Resource Balance
- Non-conventional Resources
- Remaining Resource Gap



Load Forecast – Key Elements

Economic Growth and Income



Customer Growth and Demographics

Customer Usage



Energy Efficiency – Codes and Standards
Behind the Meter Generation

Weather



DSM



Existing Resources

- Types

- Owned Generation
- DSM
- QF
- Other Purchases



- Characteristics

- Fuel Type and Supply
- Remaining Lives
 - Regulatory/Environmental Risk
- Unit Performance
- Reliability/System Support



Alternative Resources

Conventional
Generation and
Purchases



Renewables



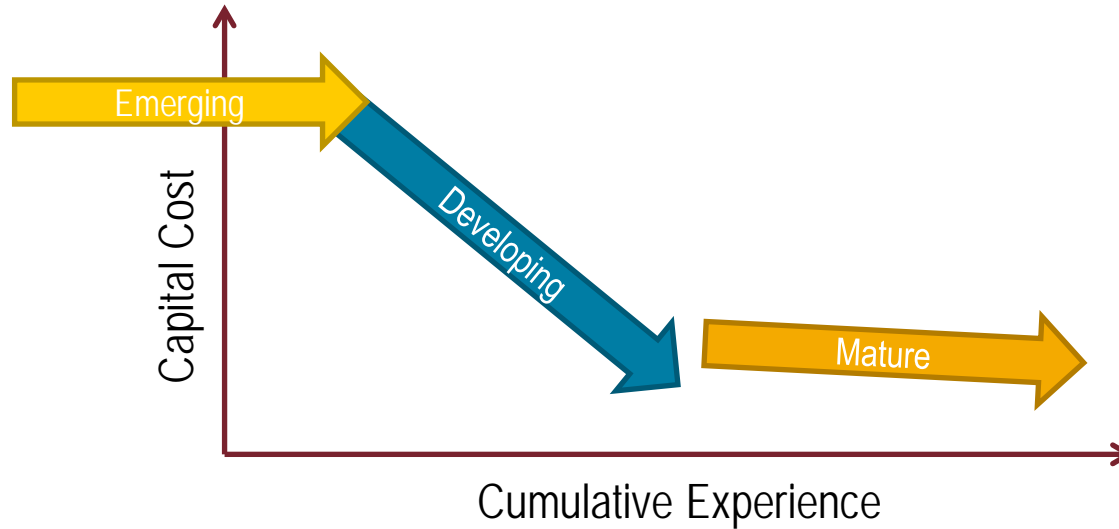
Energy Efficiency and
Load Control



Technology Cost Comparison:

- Economic comparisons of technologies are highly dependent on fuel price, capital cost, subsidy, and operating expense assumptions
- Utilization rates (unit capacity factors) can vary based on system demand and changing fuel price signals
- Technology costs cannot be viewed in a vacuum. The existing system resource mix and future projections of customer demand are main drivers for determining the optimal type of new build generation
- Comparing technologies on a levelized cost basis is wholly insufficient for planning, but can provide some high level screening benefits

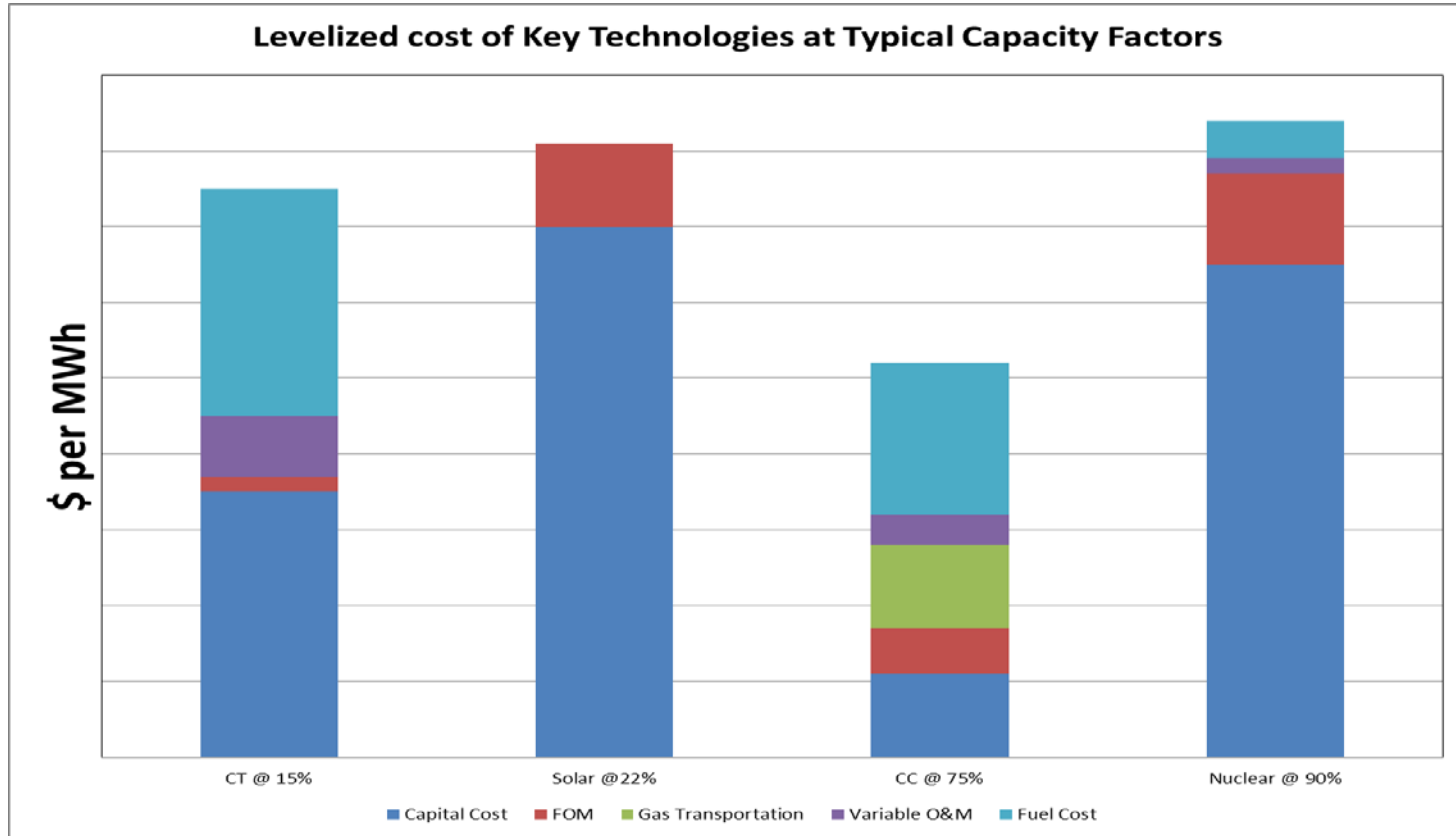
Evaluating Technology Costs



Emerging Technologies	Developing Technologies	Mature Technologies
Offshore Wind	Solar	NGCC
Fuel Cells	Distributed Storage	CT
Bulk Energy Storage Batteries	Onshore Wind – New Tech.	Onshore Wind – Existing Tech.

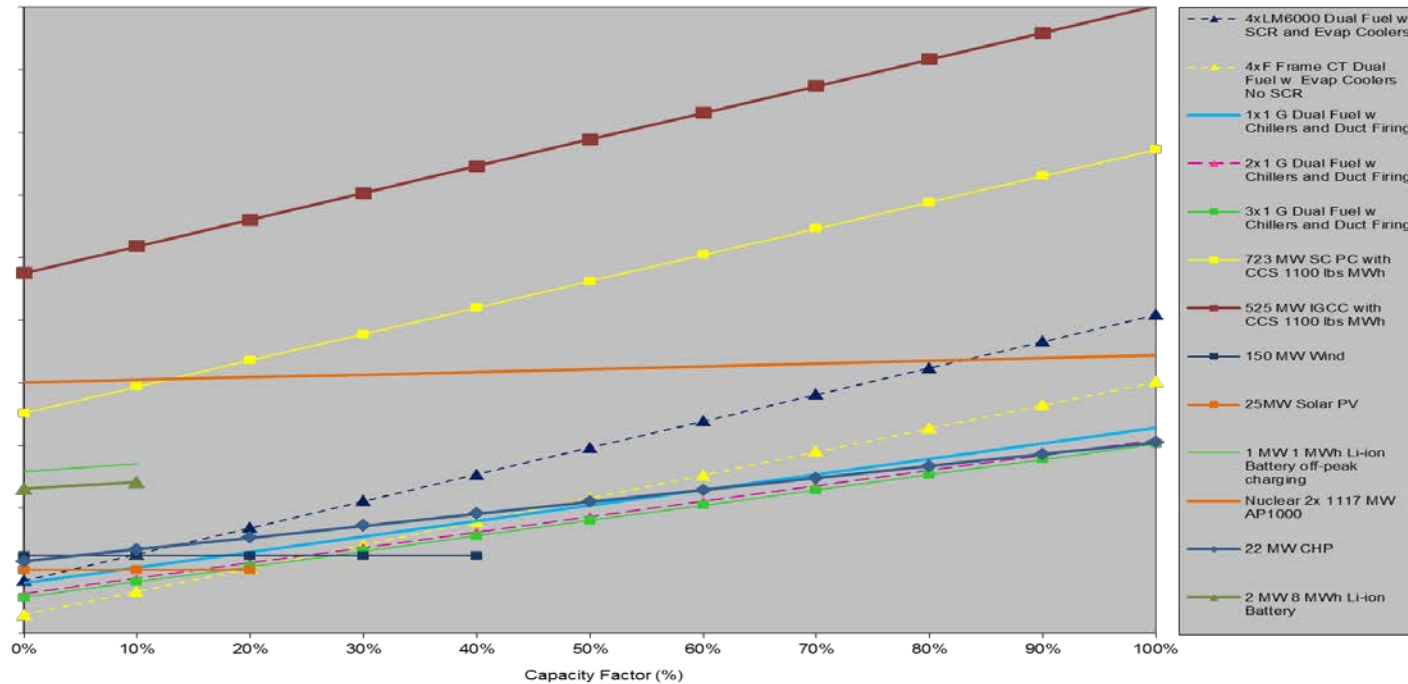
Technology Screening Cost Comparison – Illustrative Only

- Costs are made up of Capital, FOM, Variable O&M, and Fuel costs



BusBar Screening Curves – Illustrative Example

Figure 1
Levelized Busbar Cost for All Technologies



NOTE: The graph above is based on generic capital, O&M, and delivered fuel costs data but without transmission or other site specific criteria.

Development of Alternative Plans

- DEF prepares detailed data for each developing and mature technology to be included as a resource option to meet future resource needs.
- Alternative plans are created to meet capacity needs, then ranked based on life cycle costs for each portfolio. The lowest cost portfolios are then evaluated for operational feasibility and the final plan is selected.
 - DEF uses a capacity expansion model as well as a detailed production cost model in evaluating the alternative plans.
 - Technologies may contribute to capacity needs and/or energy savings.
- Long range planning is done on a generic unit basis. As resource needs enter the actionable window, specific project evaluations, including detailed reviews of location, transmission, and technical design details, are conducted.

DEF 2016 TYSP

Year	2016 TYSP Plan	Summer Rating MWs
2015	Turner 3 (Jun '15)	(53)
2016	Orange Cogen Add Capacity (Jan '16)	30
	Crystal River 1 Deration (Mar '16)	(41)
	Crystal River 2 Deration (Mar '16)	(55)
	Turner 1&2-4, Rio Pinar Retirements (May '16)	(91)
	Southern Scherer Contract Expires (May '16)	(71)
	Southern Franklin Contract Expires (May '16)	(342)
	Suwannee Steam Units 1-3 Retirements (Nov '16)	(128)
	Southern UPS Contract - Franklin (Jun '16)	425
2017	Hines 1-3 Uprate (Oct '16)	165
	Osprey PPA Expires (Jan '17)	(244)
	Osprey Acquisition (Jan '17) (after losses)	244
	Hines 4 Uprate (Jan '17)	55
2018	Intercession City 11 Summer Acq (Jul '17)	143
	Crystal River 1 Retirement (Apr '18)	(329)
	Crystal River 2 Retirement (Apr '18)	(444)
2019	CC2x1 G @ Citrus (May '18)	820
2020	Osprey Transmission Upgrade (Jan '20) *	331
	Avon Park 1-2 (May '20)	(48)
	Higgins 1-4 Retirement (May '20)	(109)
2021	Southern UPS Contract Expires - Franklin (May '21)	(425)
2022		
2023		
	Orlando Cogen Contract Expires (Dec '23)	(115)
2024	Shady Hills Contract Expires (Apr '24)	(480)
	4 CTs (Jun '24)	849
	Mulberry (Aug '24)	(115)
2025	CT (Jun '25)	212
	Orange Cogen Contract Expires (Dec '25)	(104)

DEF Planned Solar	
Year	Nameplate MW
2016	15
2017	10
2018	10
2019	50
2020	130
2021	35
2022	50
2023	75
2024	125
2025	50

