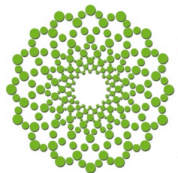


# A SAFE BET

## HOW LEAST-RISK RESOURCE PLANNING POLICIES PROMOTE RENEWABLE ENERGY



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# COST-OF-SERVICE RATEMAKING

- Utility Revenue Requirement = (Rate Base x % Rate of Return) + Operating Expenses
- Rate Base:
  - capital investments in generating facilities and other infrastructure; e.g. power plants, transmission and distribution lines
  - entitled to a rate of return (profit for investors)
- Operating Expenses:
  - non-capital expenditures; e.g. administrative costs, fuel costs
  - not entitled to a rate of return

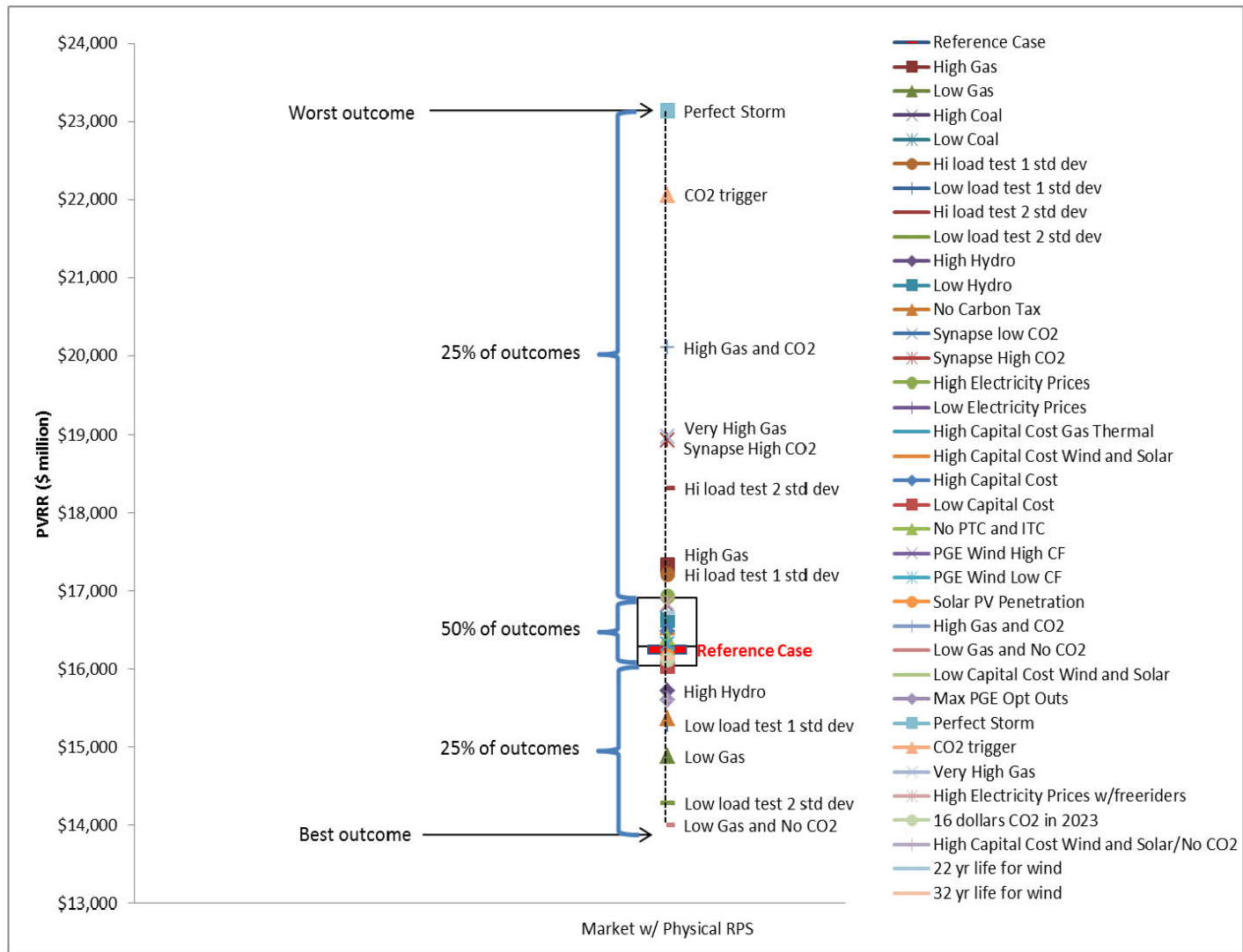
# INTEGRATED RESOURCE PLANNING

- Long-term planning process designed to prevent unnecessary resource investments
- Utilities create Integrated Resource Plans (IRPs) identifying a resource portfolio that can satisfy demand over an extended timeframe (typically 10 to 20 years)
- Least-cost portfolio has the lowest levelized costs
  - include capital costs, fixed and variable operating & maintenance costs, and fuel costs
  - "Present Value of Revenue Requirement" (PVRR) includes depreciation, return on investment, taxes

# PROJECTING FUTURE COSTS AND OUTCOMES

- Scenario and/or sensitivity analyses model how uncertain variables may impact resource costs over time
  - e.g. fuel price volatility, potential environmental regulations
- Planners must make assumptions and predictions regarding future conditions
- IRP acknowledgment supports investment approval and rate base cost recovery

**Figure 10-5: Candidate portfolio cost detail across all futures: Market with Physical RPS**



# RISKS OF LEAST-COST PLANNING

- 1) A preferred resource portfolio is typically least-cost under the future scenarios the utility believes are most probable
- 2) Public utility commissions (PUCs) in least-cost jurisdictions may have limited oversight authority over cost projections, and utilities typically are not required to justify assumptions or probability determinations
- 3) Least-cost requirements may prevent utilities from including non-least-cost resources in their rate base

# LEAST-RISK PLANNING

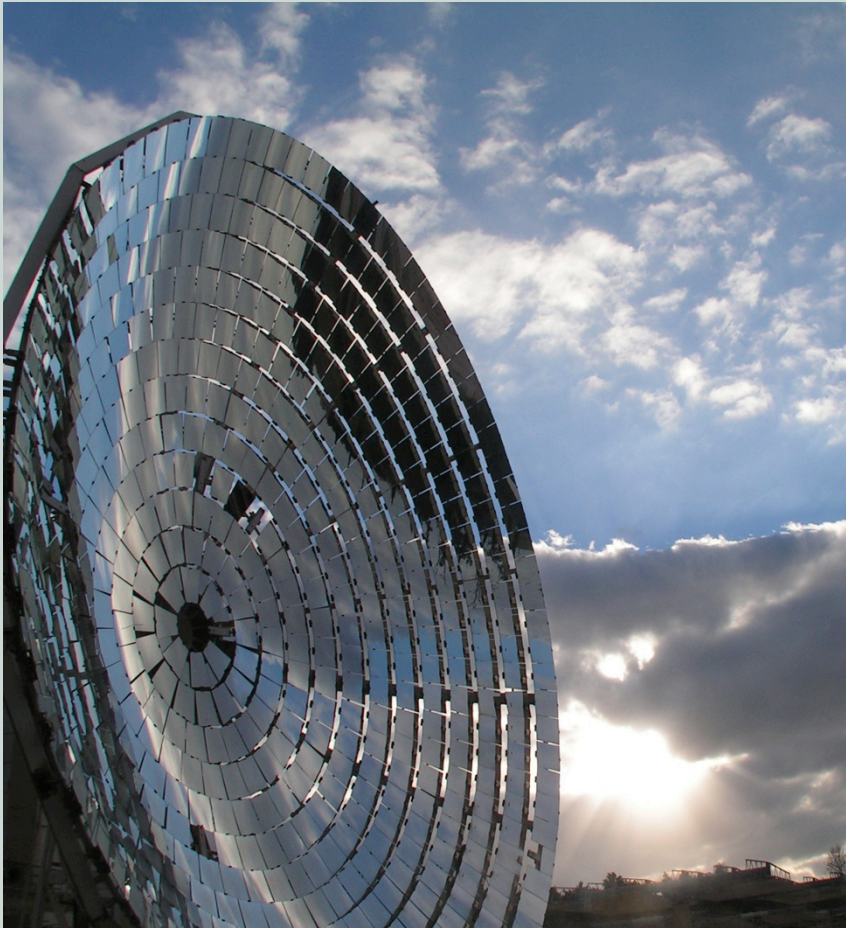


# BENEFITS OF LEAST-RISK PLANNING

- 1) Utility must assess resource vulnerability to foreseeable risks and evaluate probabilities of uncertain outcomes
- 2) Utility must justify assumptions and probability determinations
- 3) Public participation and PUC oversight inform planning process, and PUCs have authority to withhold IRP acknowledgement
- 4) Least-risk resource investments are eligible for cost recovery through rate base



# LEAST-RISK PLANNING AND RENEWABLE ENERGY



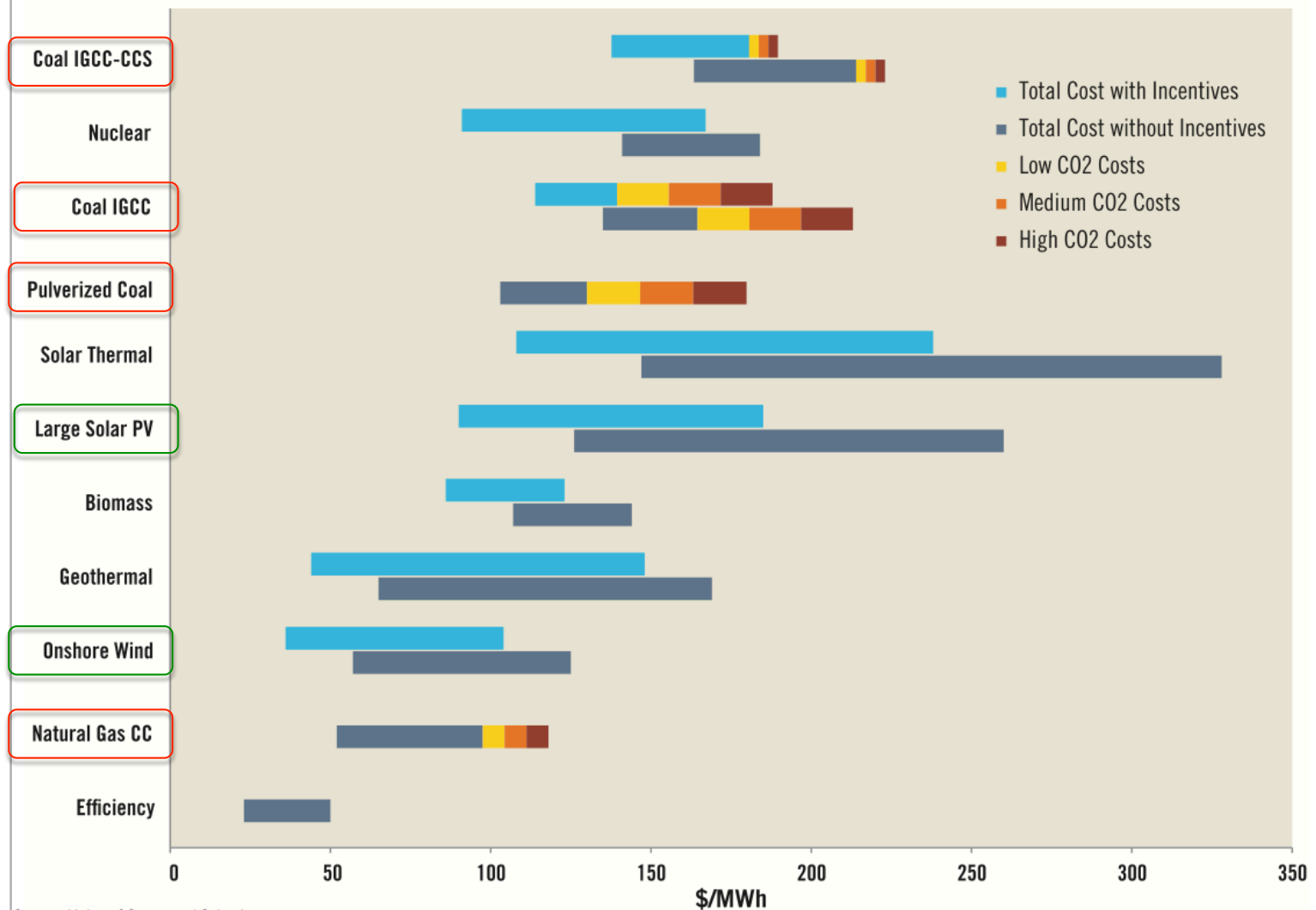
# PGE'S 2013 IRP

- Assumed federal PTC and ITC extension through 2023
- Projected carbon costs of \$16/ton beginning in 2023, increasing 8% annually
- Preferred resource portfolio adds 357 MW wind in 2020, total of 1,049 MW new wind resources by 2030

# PACIFICORP'S 2013 IRP

- Assumed PTC and ITC expiration
- Projected carbon costs of \$16/ton beginning in 2022, increasing 3% annually
- Scenarios with low natural gas prices and/or high CO<sub>2</sub> costs resulted in extensive coal plant retirements
  - portfolios deemed high cost and high risk
- Under preferred portfolio, renewable resources drop from 9.9% total generating capacity in 2013 to 9.3% in 2022

## LEVELIZED COST OF ELECTRICITY FOR VARIOUS GENERATION TECHNOLOGIES IN 2015 (2010\$)



Ceres, Practicing Risk-Aware Regulation (2012)

# ESTABLISHING EFFECTIVE LEAST-RISK PLANNING POLICIES

## STEP ONE

- Review and revise existing planning laws and regulations to eliminate least-cost planning mandates

# ESTABLISHING EFFECTIVE LEAST-RISK PLANNING POLICIES

## STEP TWO

- Develop least-risk planning rules that prioritize risk mitigation
- Rules should:
  - 1) establish least-risk planning goals and objectives
  - 2) identify risks, uncertainties, and other factors to address
  - 3) specify level of risk analysis required
  - 4) require risk-focused portfolio ranking and selection
  - 5) include provisions for transparency, public participation, and regulatory oversight

# ESTABLISHING EFFECTIVE LEAST-RISK PLANNING POLICIES

## STEP THREE

- Aid utilities in implementing least-risk planning requirements

# ESTABLISHING EFFECTIVE LEAST-RISK PLANNING POLICIES

## STEP THREE

- Aid utilities in implementing least-risk planning requirements

## STEP FOUR

- Enforce least-risk planning policies



# ESTABLISHING EFFECTIVE LEAST-RISK PLANNING POLICIES

## STEP THREE

- Aid utilities in implementing least-risk planning requirements

## STEP FOUR

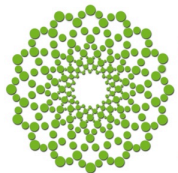
- Enforce least-risk planning policies

## STEP FIVE

- Connect IRP approval to ratemaking process

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