



**Pasadena Water & Power
2008 Integrated Resource Plan**

**MSC Public Meeting
July 16, 2008**

Agenda

- Introduction to Pace
- Integrated Resource Planning Overview
- Public Outreach & IRP Stakeholder Advisory Group
- Overview of Work Plan
- Public Questions & Comments

Introduction to Pace

Utility Resource Planning Experience

- Recent IRP Projects
- Specific Planning Decisions
 - ◆ Reconfiguring portfolios
 - ◆ Asset acquisitions and divestitures
 - ◆ Technology evaluations (nuclear, coal, wind, retrofits, etc.)
 - ◆ Contracting decisions
 - ◆ Environmental risk assessments

Integrated Resource Planning Overview

Goals for 2008 IRP Process

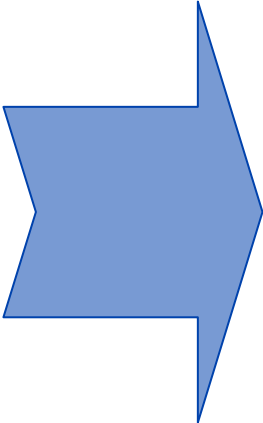
- **Comprehensive plan** for satisfying PWP's future electricity requirements for supply-side and demand-side resources
- **Systematic approach** to identify all relevant options, evaluate the trade-offs (reliability, cost, environmental) and assess the risks associated with each option
- **Extensive public input and stakeholder review** to ensure that the IRP process reflects the community's needs
- **Action Plan** to identify specific decisions and initiatives that should be implemented to achieve the policy goals of the IRP

The End Game

A risk-cognizant integrated portfolio plan and action plan/
resource acquisition strategy

Destination

Sample Portfolio Considerations

- **Broadway and Glenarm resolution**
 - **Future remote renewable resources**
 - **Future PV & distributed generation**
 - **Future enhanced EE programs**
 - **Transmission options**
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Roadmap

Action Plan & Strategy Considerations

- **Policy guidelines (RPS %)**
- **GHG reduction plan**
- **Enhanced EE/DR action plan**
- **Local RE strategy**
- **Renewable acquisition game plan (RFPs)**
- **Plan update process**

PWP Situation Assessment

- Modest incremental load growth expected in the future
- Aggressive energy efficiency goals
- Ongoing need for local generation for reliability
- Aging gas-fired generation inside the city
- Limited interconnection to broader power grid
- Significant reliance on coal-fired power
- Environmental leadership goals that may need refreshing

The City's Environmental Commitment



GREEN CITY ENERGY ACTION PLAN

ACTION 1

Increase the use of renewable energy to 10% of the City's peak electric load by 2012

ACTION 2

Reduce the City's peak electric load by 10% by 2012

ACTION 3

Reduce greenhouse gas emissions by 25% by 2030

Key Drivers Affecting PWP's IRP Options

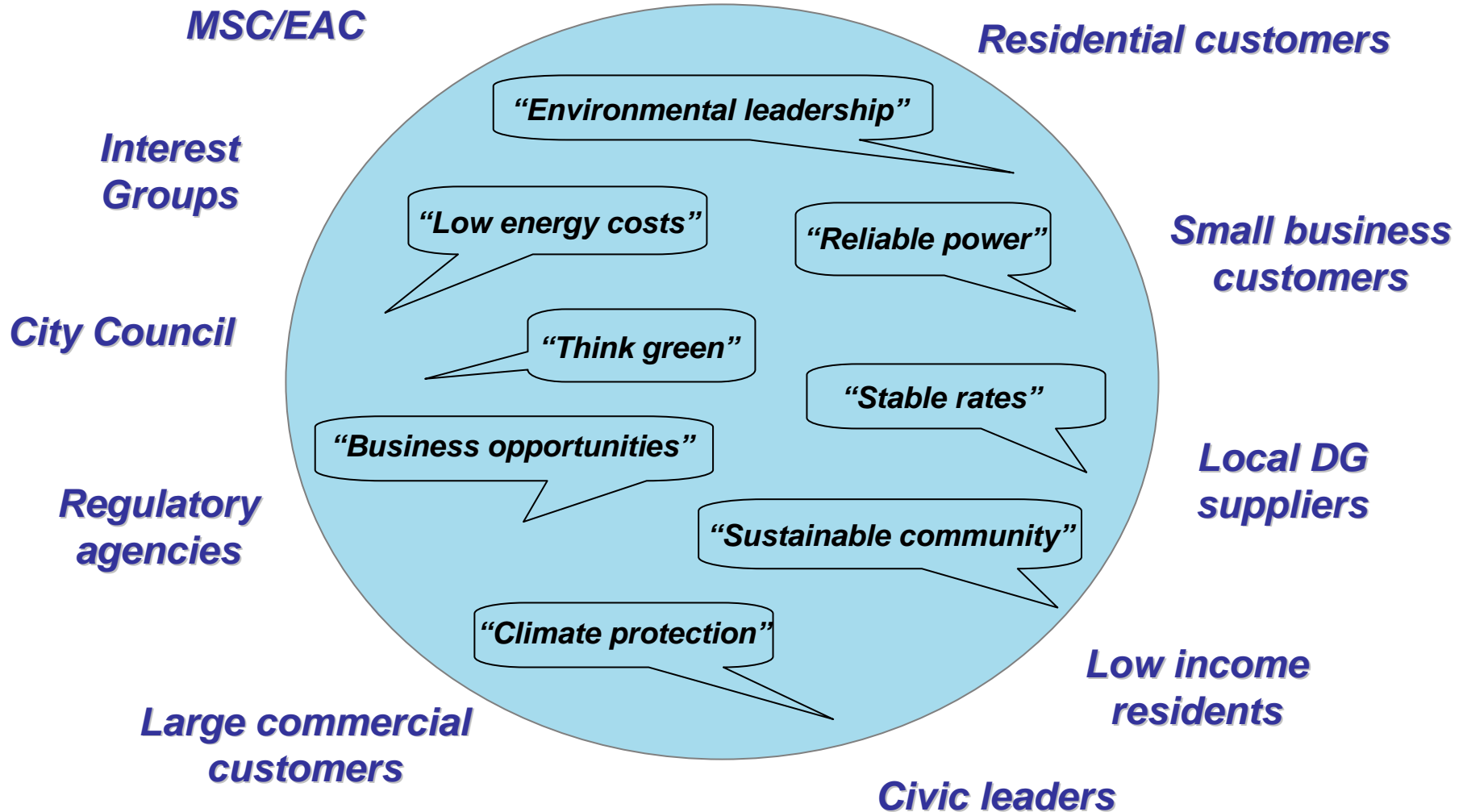
- High and volatile fuel and capital costs
- Rising Renewable Portfolio Standards
- Carbon constraints weighing on coal generation
- Significant exposure to potential cost increases
- Evolving regulatory and environmental challenges
- Ongoing technology advances opening new opportunities
- Power supply reliability

Preliminary List of Resource Policies to be Evaluated

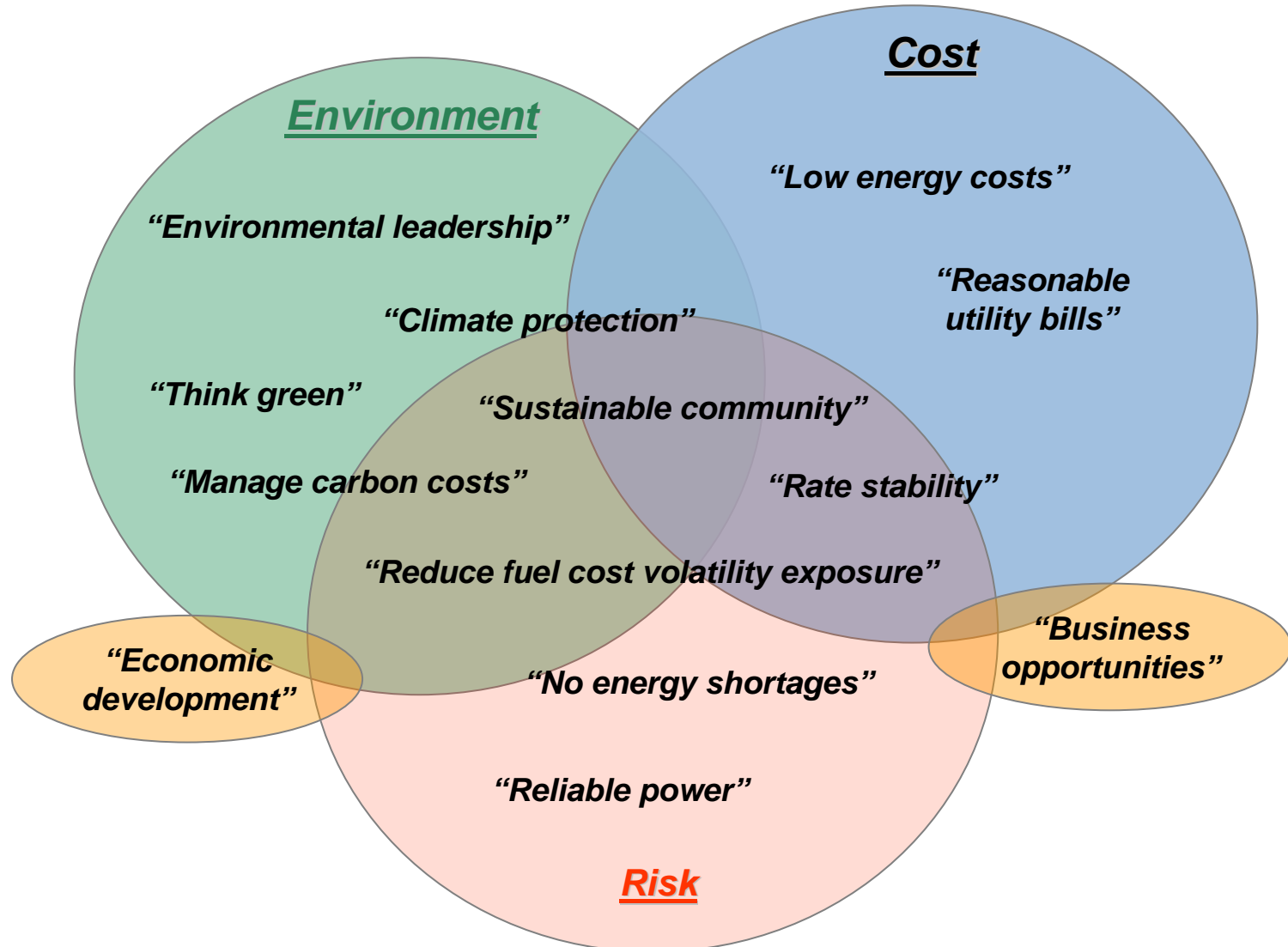
- **Aggressive expansion of energy efficiency programs**, including the potential for zero or negative load growth
- **Increasing renewable supplies**, including assessment of a 100% renewable portfolio
- **Options for in-city power plants**, including repowering of Broadway and Glenarm stations
- **Transmission Upgrades**, in order to enhance reliability and reduce power import constraints
- **Reductions of fossil fueled generation**, including the displacement of existing coal and gas resources
- **Local renewables and distributed generation**, including solar photovoltaics, advanced metering and combined heat and power applications

Public Outreach and Stakeholder Participation

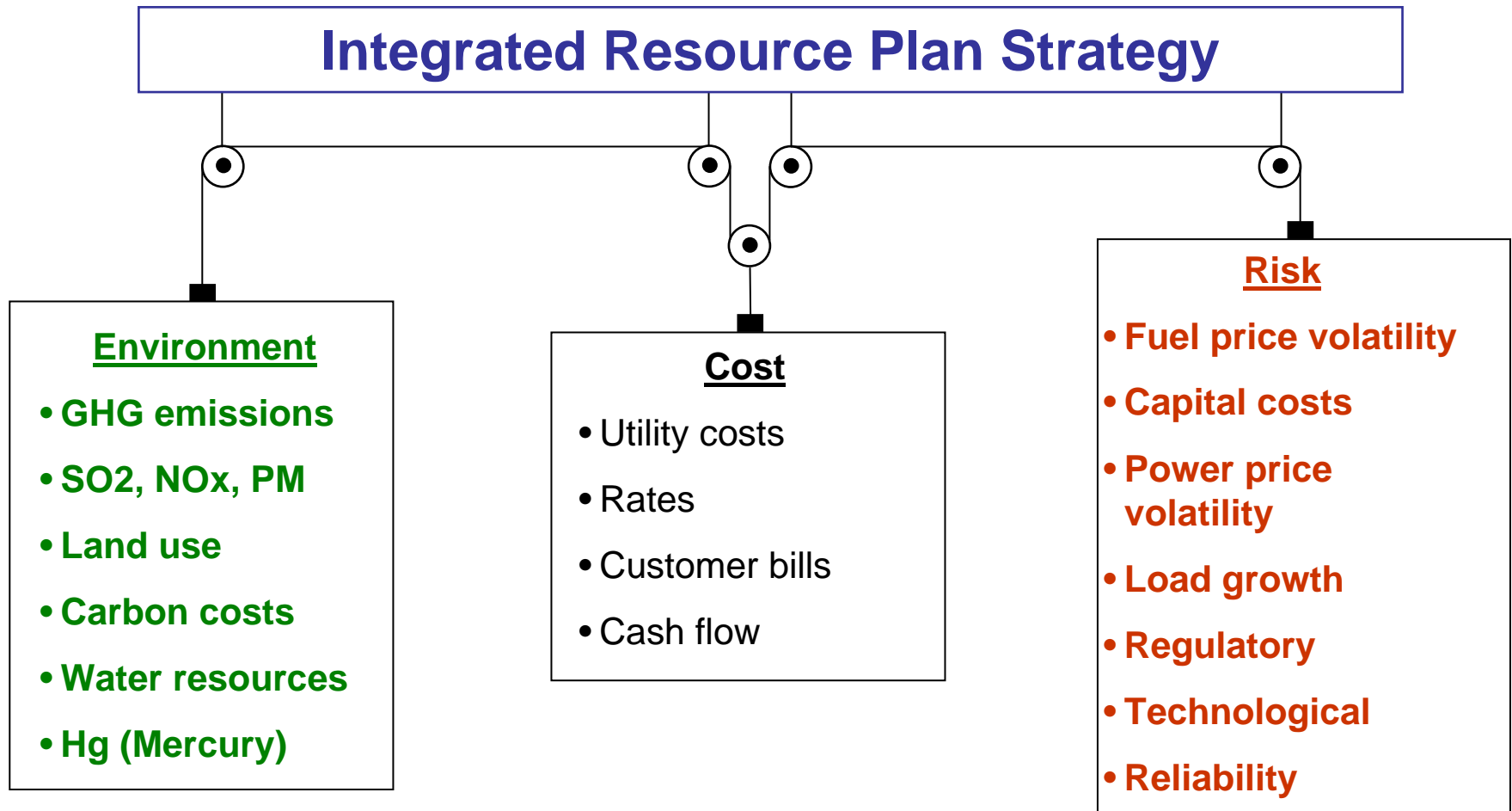
Stakeholders Have Different Objectives



Defining Objectives and Their Relationships is a Critical Element



Finding the Right Balance Depends on Priorities of Competing Objectives



Public and Stakeholder Participation Success Factors

- **Balanced** **Process and outcome should be sensitive to a wide variety of viewpoints**
- **Responsive** **All comments and suggestions should be addressed**
- **Transparent** **Process and analysis should be open and understandable (no “black boxes”)**
- **Educational** **Process should allow for learning and insight**
- **Manageable** **Process should respect timelines and milestones**
- **Cost-effective** **Process should consider limited financial resources**

Public Outreach and Stakeholder Participation

Two primary avenues of public/stakeholder participation:

- **IRP Stakeholder Advisory Group**

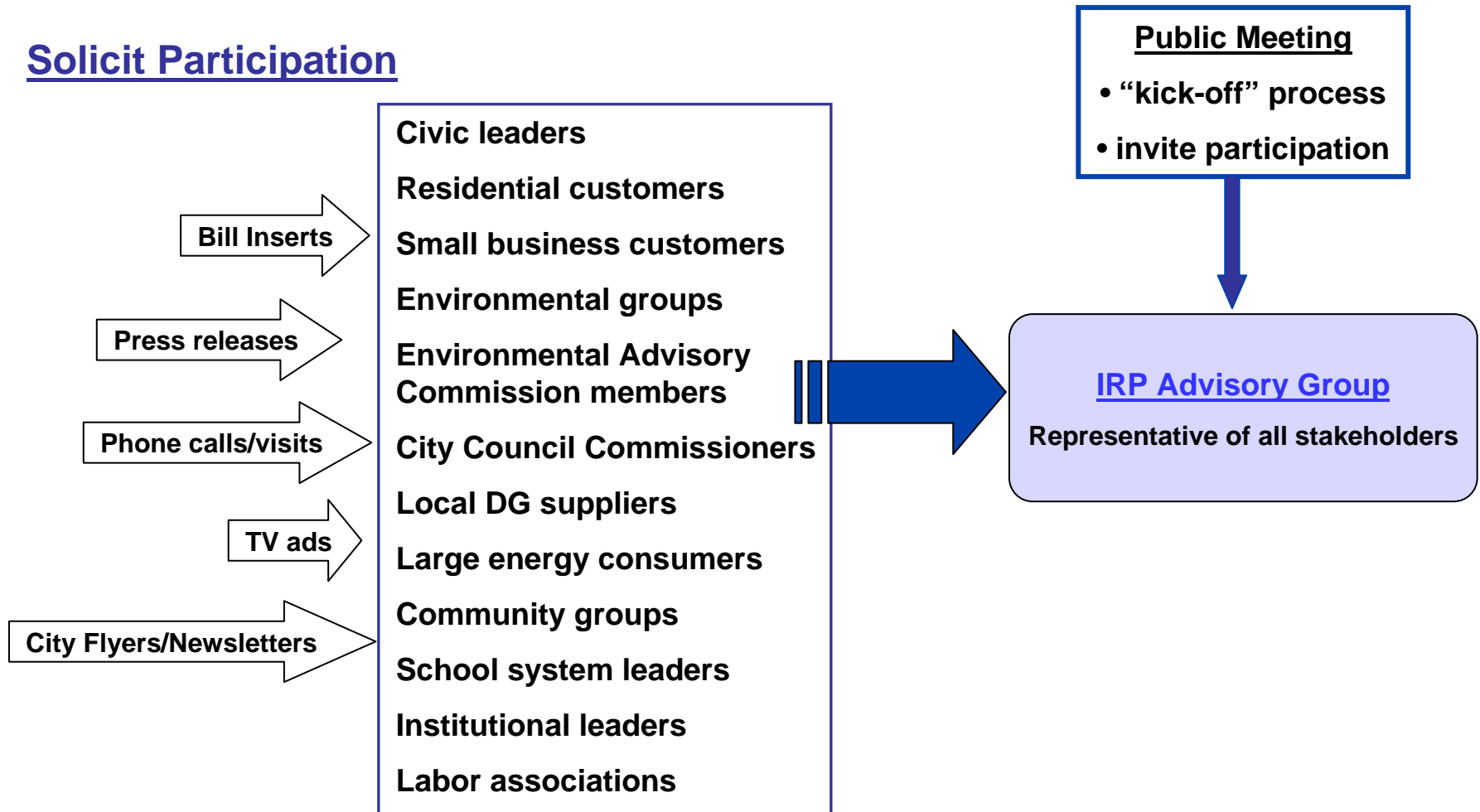
- ◆ A working group that will attend monthly half-day sessions reviewing analysis and providing input and suggestions for the IRP analysis

- **Public meetings**

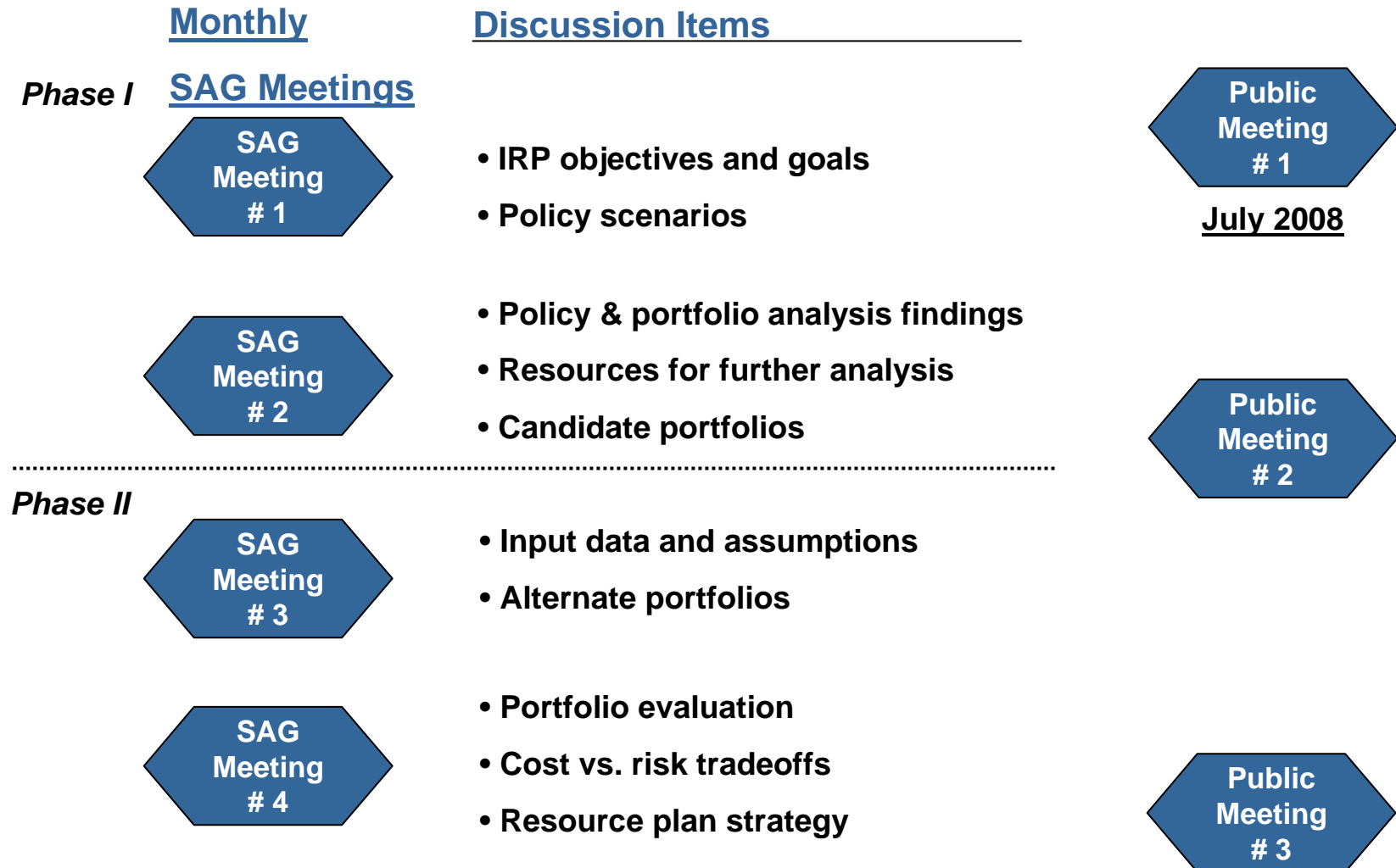
- ◆ Presentations to the public at large to discuss findings and solicit feedback

Public Outreach and Stakeholder Process

Solicit Participation

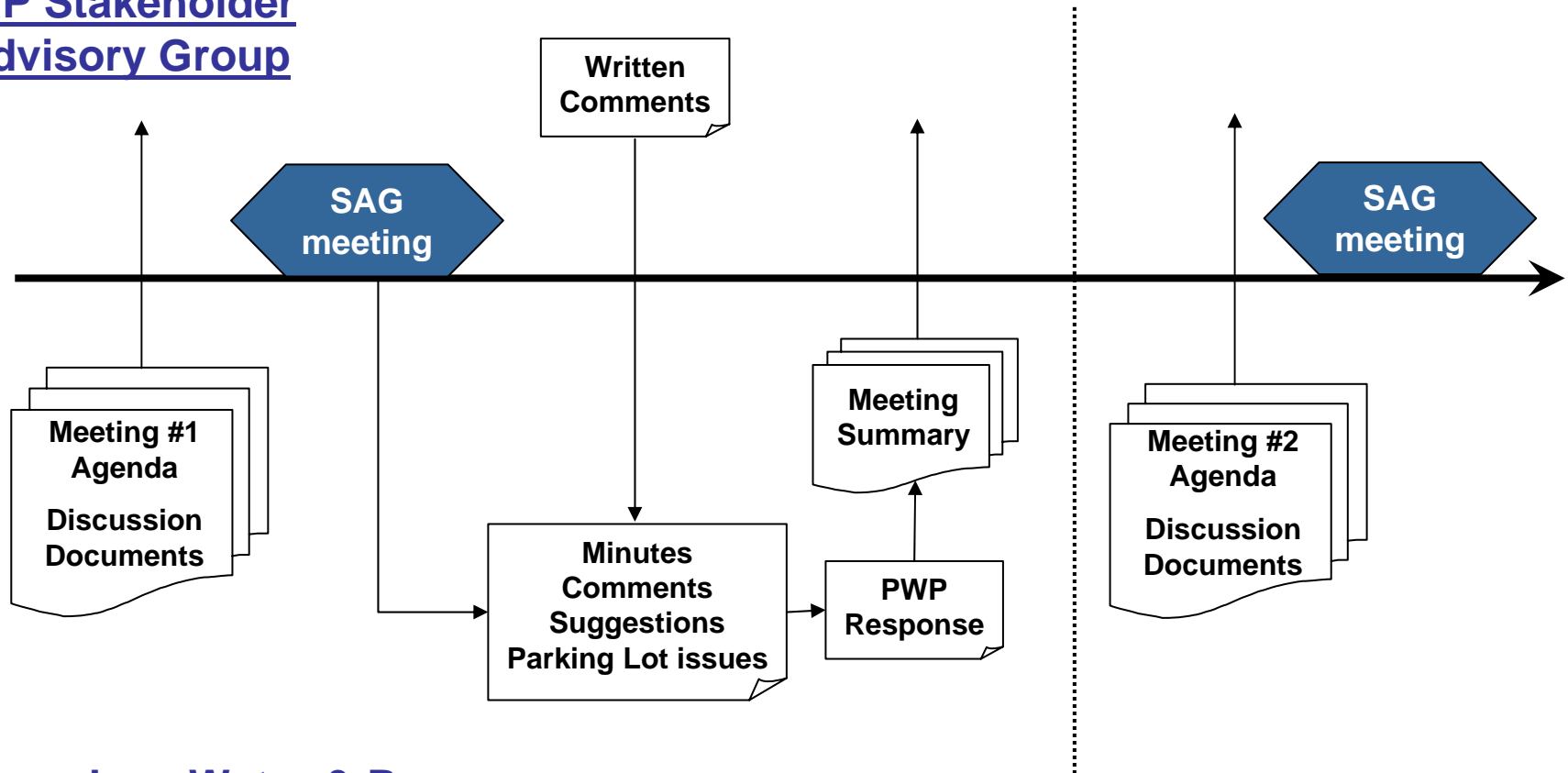


IRP Stakeholder Advisory Group and Public Meetings



Integrating the Stakeholder Advisory Group

IRP Stakeholder Advisory Group



Pasadena Water & Power

Overview of Work Plan

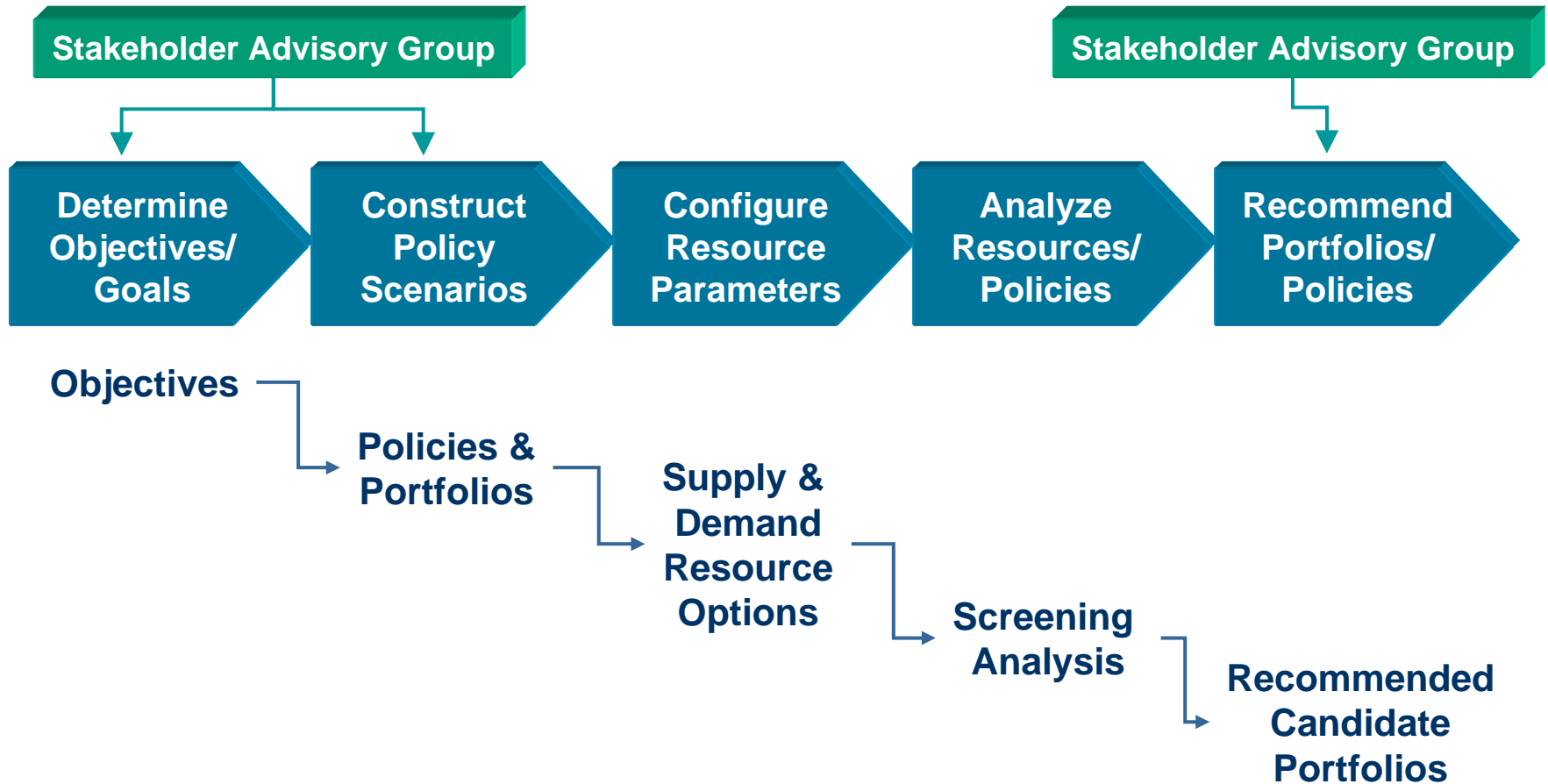
Demand-side Resource Options (preliminary)

- Energy efficiency programs
 - ◆ Energy monitoring and information systems
 - ◆ Residential efficiency programs (lighting, appliances, Energy Star® homes)
 - ◆ Commercial efficiency programs (lighting, process, HVAC, etc.)
- Load control/demand response
 - ◆ Automatic metering
 - ◆ Water heater and air conditioner cycling
 - ◆ Commercial load curtailment
 - ◆ Commercial load shifting - thermal energy storage (Hill Library project)
- Distributed Generation
 - ◆ Rooftop photovoltaic applications (Solar PV)
 - ◆ Solar water heater systems
 - ◆ Small wind applications

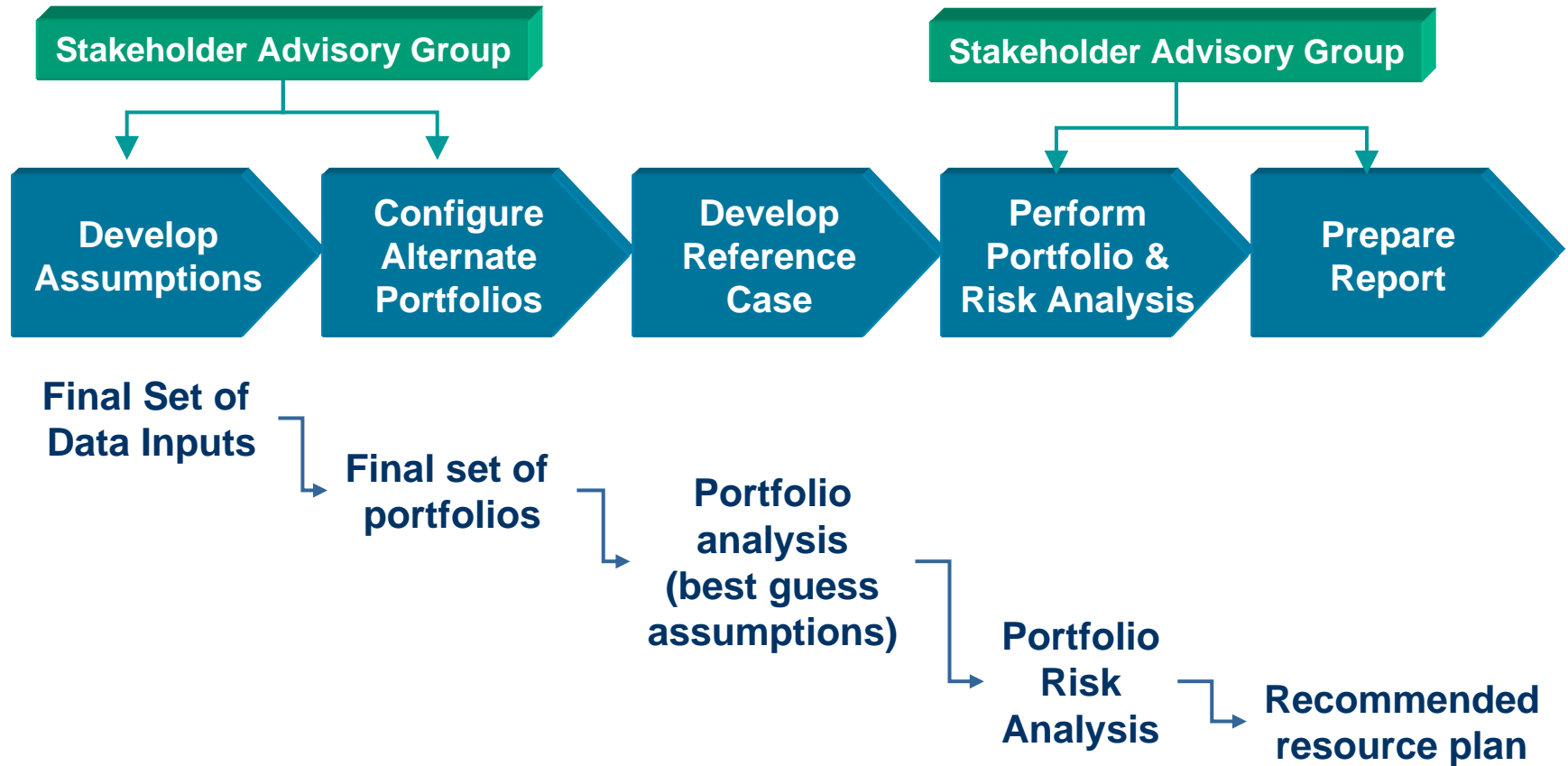
Supply-side Resource Options (preliminary)

- Renewable resources
 - ◆ Remote utility scale wind & solar thermal applications
 - ◆ Biomass (crops, landfill, wood waste)
 - ◆ Small hydro
 - ◆ Geothermal
- Fossil fuel resources
 - ◆ Gas unit repowering
 - ◆ New combined cycle
 - ◆ Purchase contracts
- Non-GHG emitting resources
 - ◆ Large Hydro
 - ◆ Nuclear
 - ◆ IGCC with carbon sequestration
- Transmission options
 - ◆ Expanded import capability
 - ◆ New interconnection points

Phase I Process – Narrowing the range of possibilities



Phase II Process – Evaluating environmental, cost and risk tradeoffs



Preliminary Schedule

| Task | Month | | | | | | | | | | |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | Apr08 | May08 | Jun08 | Jul08 | Aug08 | Sep08 | Oct08 | Nov08 | Dec08 | Jan09 | |
| PHASE I | | | ■ | | | | | | | | |
| PHASE II | | | | ■ | | | | | | | |
| IRP Advisory Group Meetings | | | | ◆ | ◆ | ◆ | | | ◆ | | |
| Public Meetings | | | | ◆ | | | ◆ | | ◆ | | |

◆ Approximate meeting date

Questions & Public Comments