Northwest Power and Conservation Council

January 31, 2007

MEMORANDUM

TO: Council

FROM: Jeff King

SUBJECT: Briefing regarding the Wind Integration Action Plan

This briefing will provide an overview of the Wind Integration Action Plan (WIAP), submitted to the WIAP Policy Steering Committee on January 22. The WIAP is the product of an intensive six month effort by Bonneville, the Council, regional utilities, wind power developers, state commissions, and other participants. The report includes the findings of the initial phase of the effort, a primer on wind power in the Northwest, and a set of actions needing to be undertaken over the next two years. Achievement of these actions will ensure that the near-term demand for new wind power can be accommodated by the regional power system, and that the 6000 megawatts of wind power identified in the Fifth Power can be integrated over the longer-term.

Among the initial findings of the effort are: (1) the current power system is physically capable of operationally integrating to 6000 megawatts of wind power, though there are significant institutional barriers to efficient use of this capability; (2) the cost of integration services is of the same order of magnitude assumed in the Fifth Power Plan; and, (3) while sufficient firm transmission capacity exists to service anticipated wind development through 2009, Bonneville does not have sufficient firm capacity to serve its current queue of interconnection requests, nor sufficient transmission capacity to accommodate its share of 6000 megawatts if current geographic patterns of development continue.

The recommended actions cover a broad spectrum of topics, including data development, system integration services, transmission services, cost recovery and proactive actions to maximize the value and minimize the cost of new wind power over the long-term. Established organizations exist to undertake most of these actions. However, because of the urgency of resolving these issues, the report recommends that a Northwest Wind Integration Forum be established under the auspices of the Council to monitor and evaluate progress on the actions.

Attachment: Draft Wind Integration Work Plan

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

Northwest Wind Integration Action Plan

Northwest Power & Conservation Council

Power Committee

Portland, OR

February 13, 2007

Northwest Wind Integration Action Plan

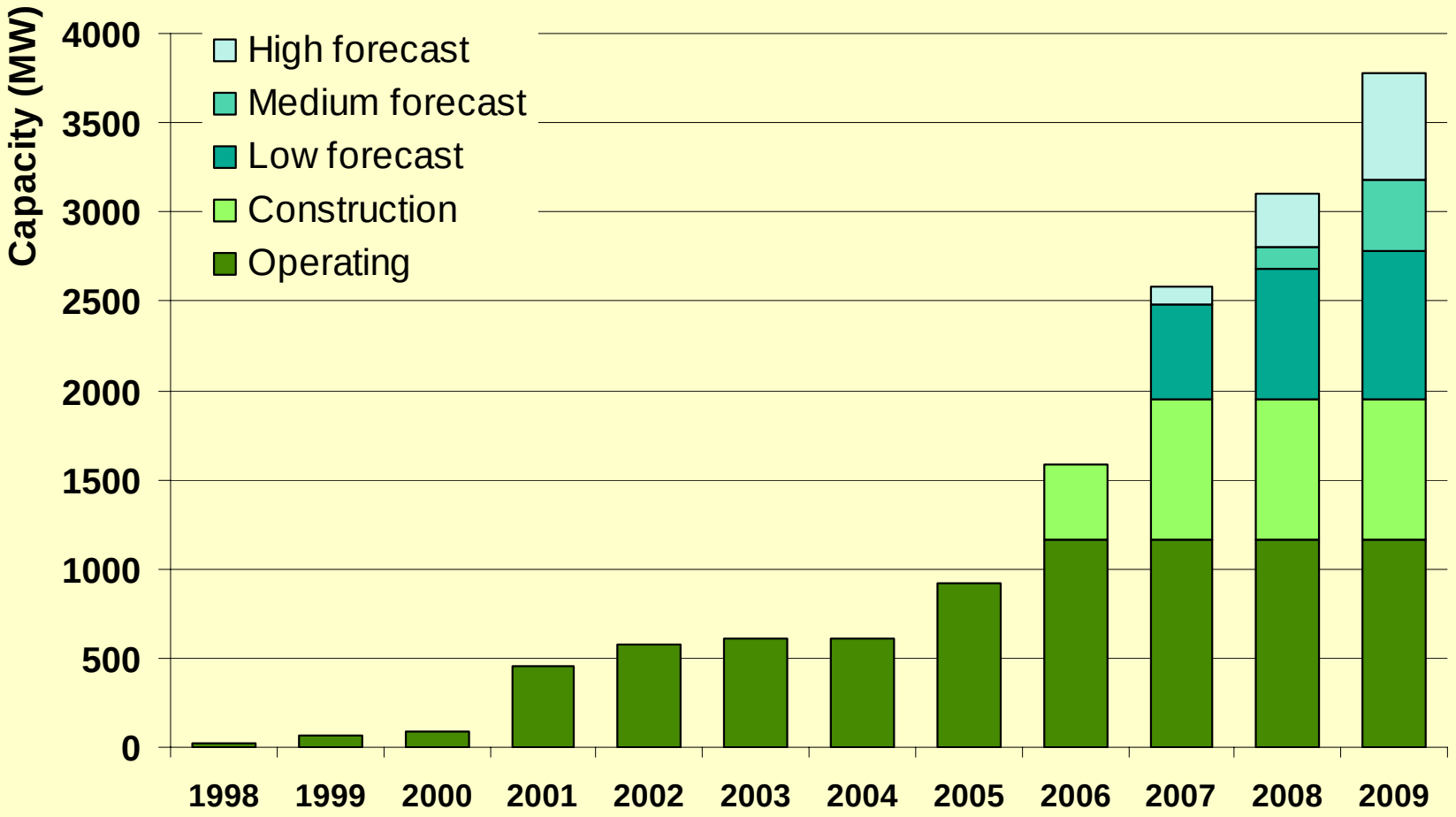
Purpose: Identify cost-effective ways to integrate a substantial wind energy portfolio (6000+ MW) in the Northwest

Product:

Findings and recommendations in the form of an action plan (WIAP)

Endorsed by the leaders of the major organizations involved in renewable energy development in the Northwest

Motivation: Rapid wind development



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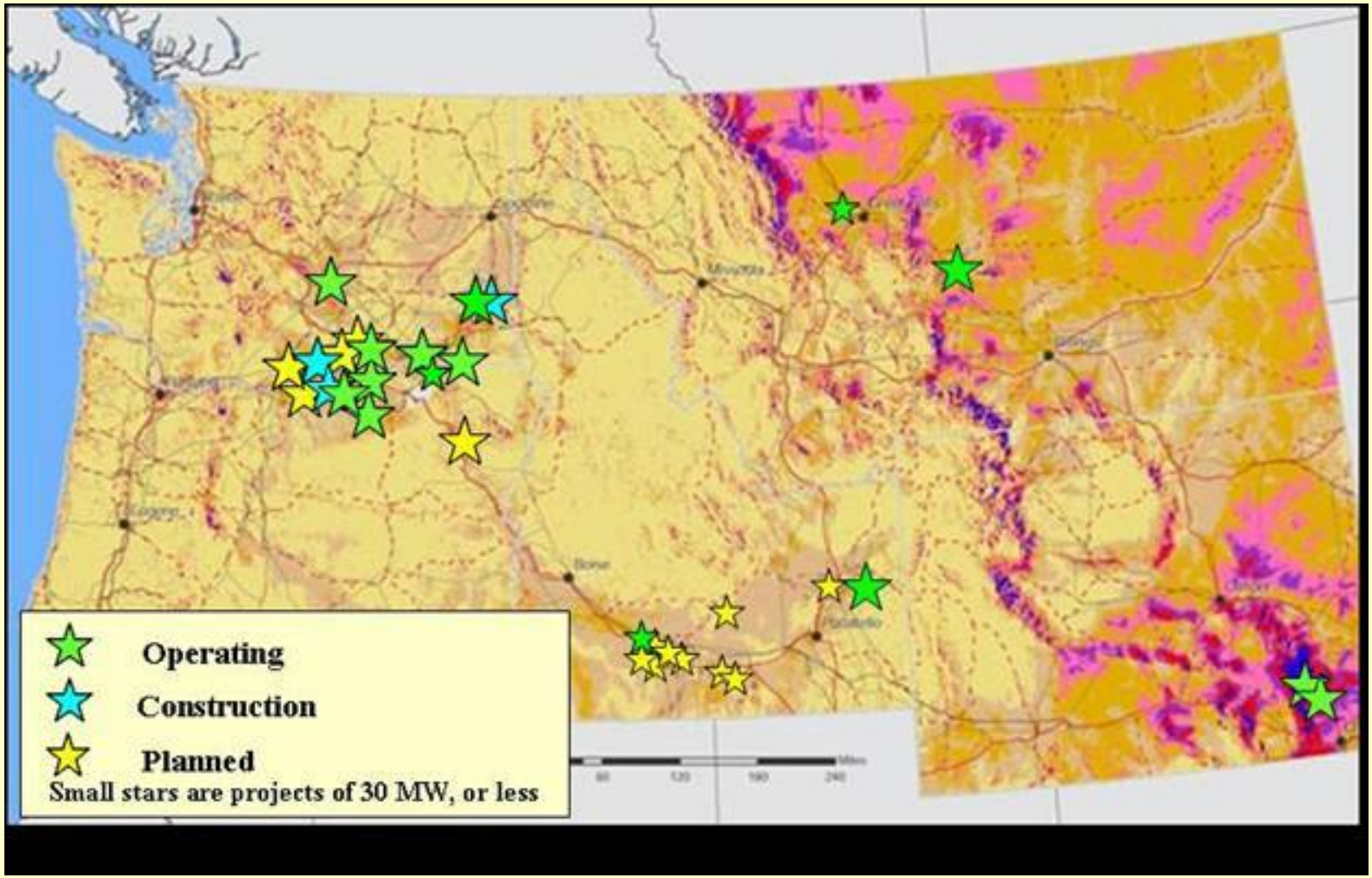
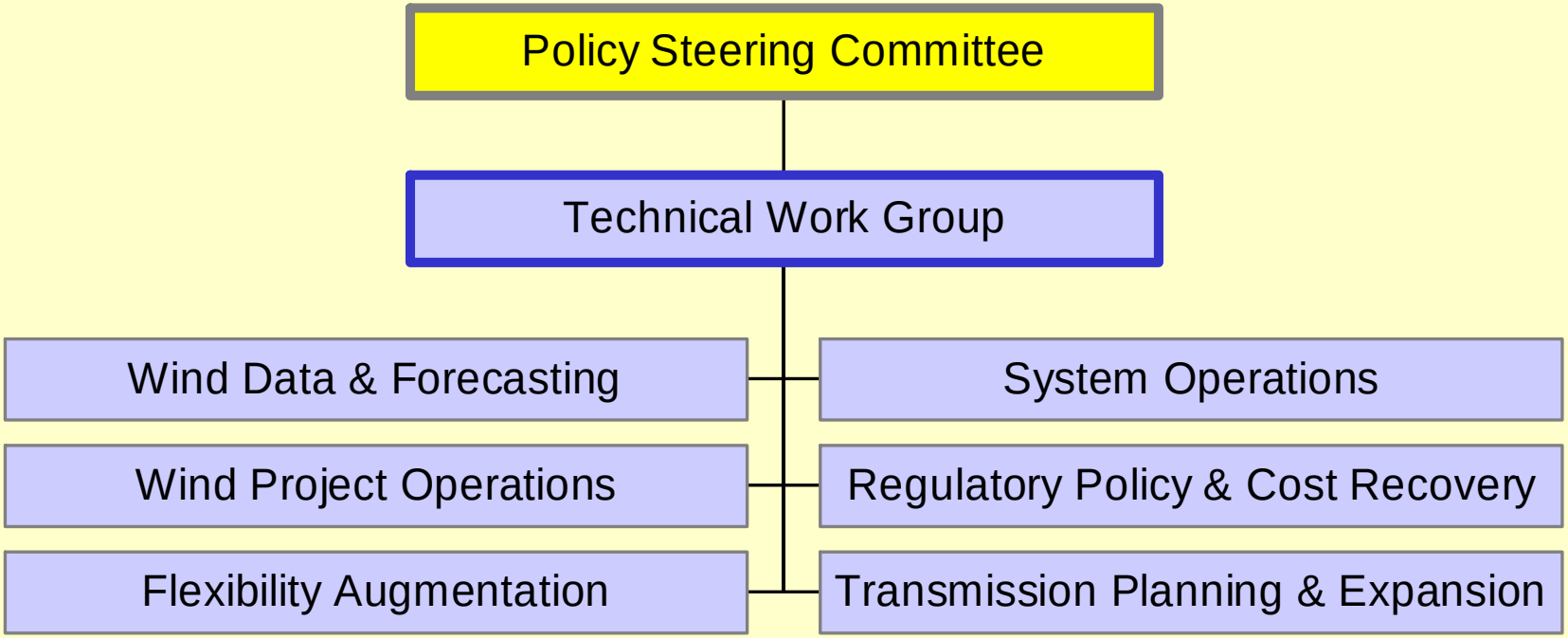
Motivation: Concentration of development



WIAP Organization



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Key issues

- Role of wind energy in a power supply portfolio
- Operational integration of 6000 MW of wind
- Transmission requirements for 6000 MW of wind
- Equitable recovery of wind integration costs
- Maximizing the value of wind at least cost

Contents: Wind Integration Action Plan

Executive Summary

Introduction

I. Role of wind energy in the Northwest power system

II. Operational capability and costs

III. Transmission requirements

IV. Wind integration cost recovery

V. Regional strategies to reduce costs

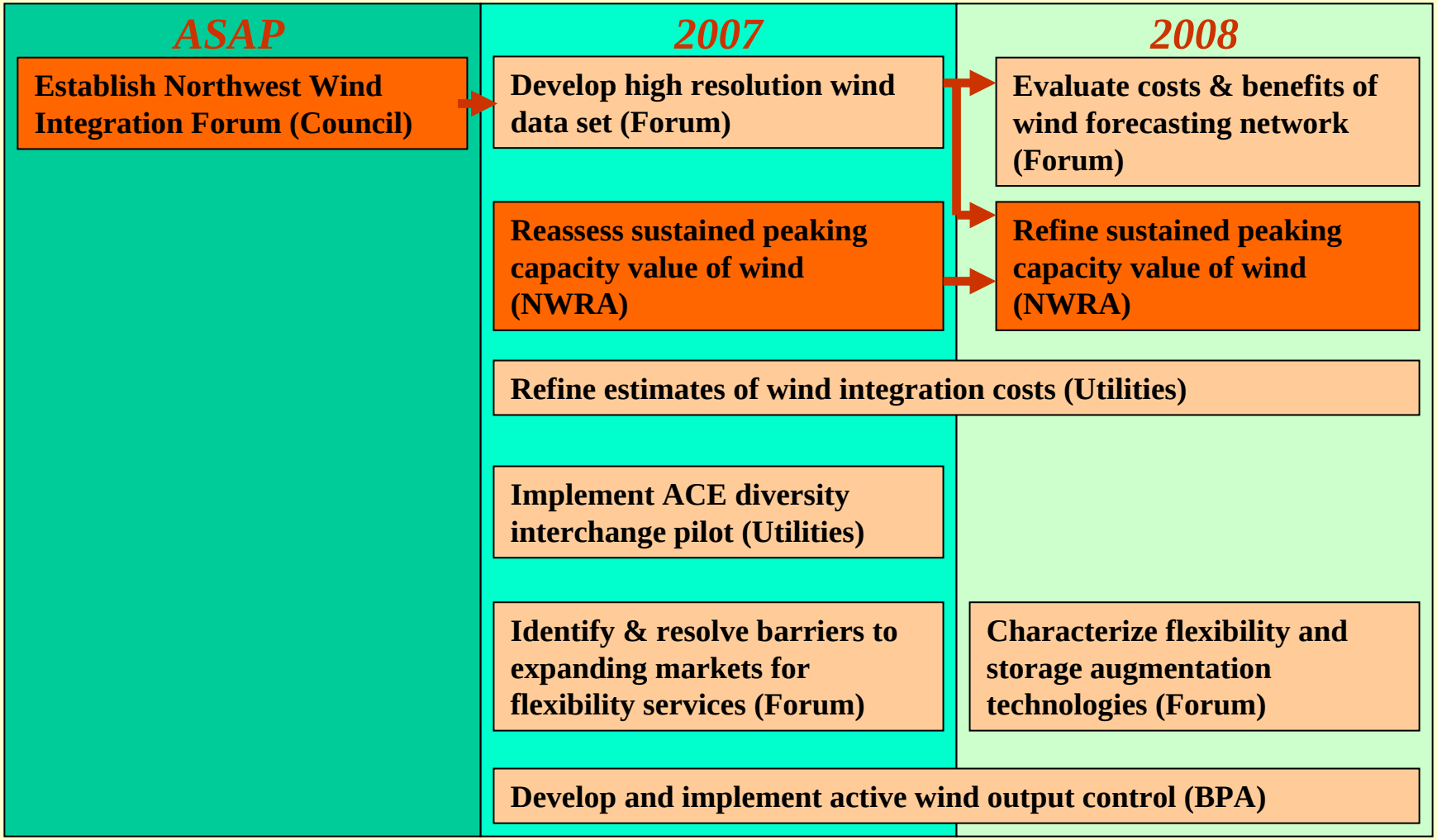
VI. List of Action Plan Items

Glossary and Appendices

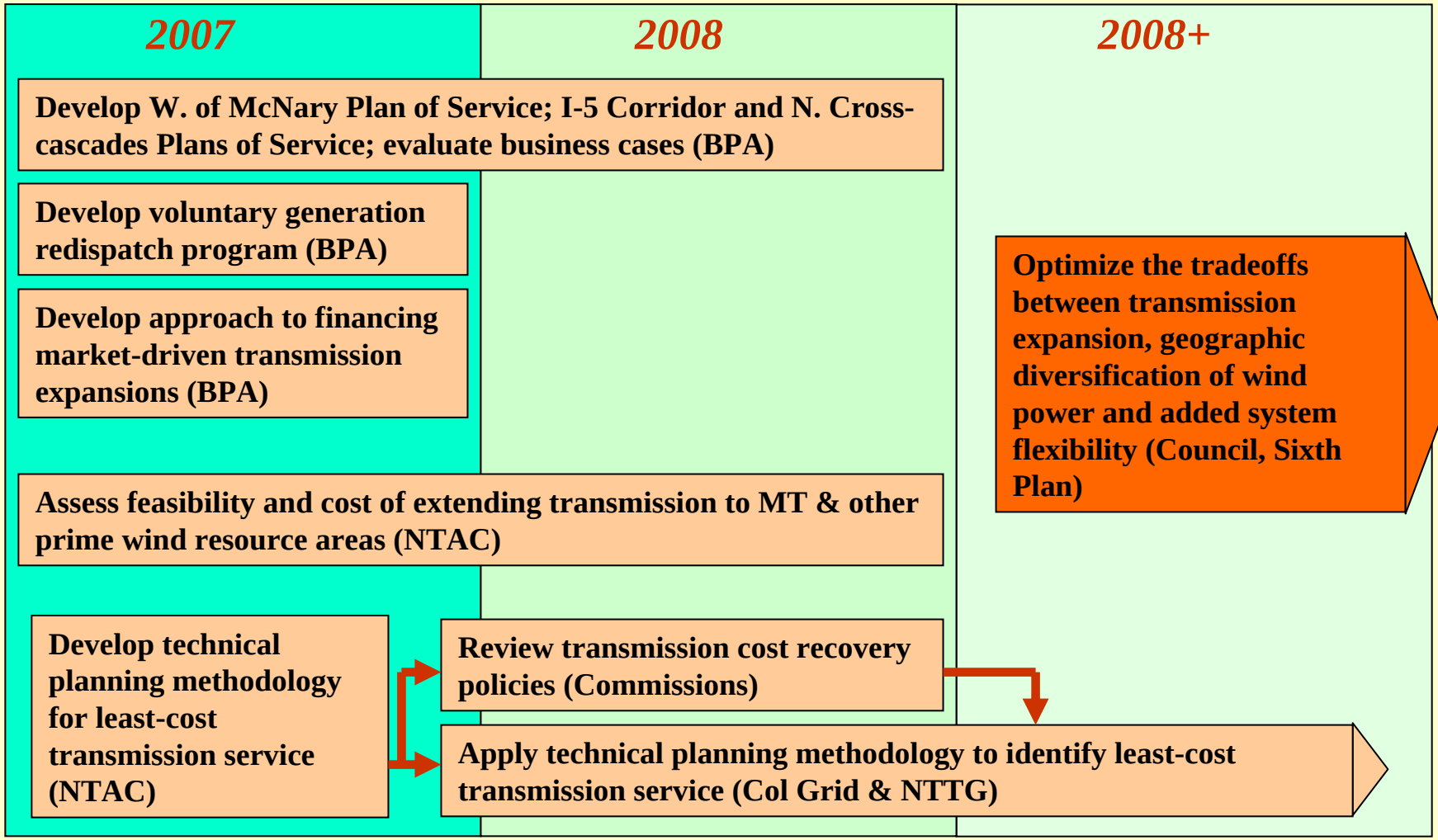
Key findings

- No fundamental technical barriers to operationally integrating 6000 MW of wind power, providing:
  - Future wind plants are equipped w/ramp & output control capability
  - Current availability of operating reserves is not reduced
- Weak markets inhibit efficient use of existing operating reserves.
- Preliminary estimates of operating reserve costs range from $1.50 – 12.00/MWh at ~ 20% wind penetration.
- Existing transmission can accomodate near-term wind development.
- 6000 MW can be accomodated w/combination of firm and non-firm transmission and selective reinforcements.
- Wind has a low capacity value, probably lower than the NWRA Forum provisional 15%.

Action Items I



Action Items II



Northwest Wind Integration Forum

- Monitor, facilitate and review implementation of the actions called for in the WIAP.
- May choose to directly undertake actions where efficient to do so.
- Steering Committee and Core Analytical Team
- Actions directly undertaken by Forum funded and otherwise supported by participating organizations
- Chartered as soon as practicable
- Initial period of two years