Overview

• Background on the Outlook
• Assumed Key Assumptions and Trends
• Expected Key Conclusions
• Discussion
Background on the Outlook

- Long-term (to 2030) perspective on APEC energy Demand and Supply
- Summarizes wide range of energy issues in all APEC economies
- Relies heavily on advice and feedback from APEC government experts
- Three previous editions, last one in 2006
Project Scheduling Goals

• Model results ready for outside review: EWG Meeting and APERC Workshop, Chile, 20-23 April 2009

• Draft document ready for outside review: June 2009

• Document published: early August 2009
Despite recent economic crisis, continued economic growth and progress over the long-term, especially in developing economies

- Shift to commercial fuels and electrification
- Motorization
- This is a good thing, especially for millions of people who will be lifted out of poverty
- But it does pose some significant energy challenges

Oil prices remain moderate, at least on average
Assumed GDP and Population

GDP (Billion 2000 US$ PPP)  Population (million)
Business-As-Usual Assumption

- Energy policies of APEC governments changing rapidly
  - Economic crisis response
  - Oil security response
  - Climate change response
- *Clearly, the future will not be business-as-usual*
- Yet, business-as-usual can still provide a key benchmark for analyzing any future changes
- Definition of Business-As-Usual (BAU):
  - Includes policies already being implemented
  - Does *not* include ‘targets’, ‘goals’, or policies governments may have announced unless their implementation is certain and well defined
Expected Conclusion #1: Oil Security

APEC Region Will Be Increasingly Dependent on Middle East/African Oil
Implications of Import Dependency

• Oil import dependency implies:
  – Dependence upon political events in other regions, such as the Middle East and Africa
  – Dependence upon national oil companies and multi-national oil companies to make adequate investments
  – Oil prices increasingly influenced by market power of producing countries
  – Dependence upon secure transport from the Middle East and Africa

• Likely Outcomes:
  – Continued oil price volatility a near certainty
  – Significant risks of supply disruptions
  – Both of the above threaten the economic stability of the APEC economies and the world
Expected Conclusion #2: The Economic Crisis

• Current economic crisis increases risk of inadequate investment in energy infrastructure
  – Could threaten security of supply and price stability as the economy recovers
• Governments are working together to unlock financial markets
• A positive side-effect of government intervention may be to direct energy investment in more secure and environmentally-friendly sources
Expected Key Conclusion #3: Minimum APEC Intensity Goals Will Be Met Under BAU

Intensity down more than 25% compared to 2005
Expected Key Conclusion #4: BAU is Still Environmentally Unsustainable

- The best science says that the path we are on has a great probability of disastrous climate change consequences
- Graph on the following slide illustrates the dilemma (Taken from the IPCC *Fourth Assessment Report; Synthesis Report, 2007*, p.66)
**Emissions vs. Temperature Rise**

**CO₂ emissions and equilibrium temperature increases for a range of stabilisation levels**

[Graph showing historical emissions and projected equilibrium temperature increases for different stabilisation levels.]
What Happens If CO2e > 450-535 ppm?

- Rising in sea level
- Damage to coral reefs and fish stocks
- Melting glaciers
- Droughts and heat
- Severe weather
- Spread of tropical diseases and pests
- Mass extinctions of wildlife
- Risk of ‘positive feedbacks’ making things even worse
APEC Greenhouse Gas Emissions

The chart above illustrates the CO2e (Mt) emissions from 1990 to 2030 for various sectors:
- **Others**
- **Transport**
- **Industry**
- **Other Transformations**
- **Electricity Generation**

The emissions have shown an increase over the years, with significant contributions from the Transport and Electricity Generation sectors.
Expected Conclusion #5: Unconventional Gas

- New technology for unconventional gas development has reversed decline of gas production in U.S.
  - U.S. no longer likely to be large LNG importer
  - Frees up LNG supplies for other economies
  - Reduces need for LNG imports from outside APEC, such as the Middle East and Africa
- Technology could be applied elsewhere, allowing more domestic gas production throughout the APEC region
  - Could help reduce coal use in power generation
US Gas Production and Imports

The graph shows the comparison between US gas production (blue bars) and US gas imports (red bars) from 1990 to 2030. The production and imports are measured in Mtoe (Million tons of oil equivalent). The graph indicates a steady increase in both production and imports over the years, with a notable rise in production and imports expected in 2030.
Expected Conclusion #6: Push for Sustainability

• Many APEC governments are greatly expanding efforts to promote energy efficiency and low-carbon energy
• Examples:
  – China: 11th Plan for Economic and Social Development
  – Japan: “Top Runner”
  – USA: “Green New Deal”
• But more effort will still be needed for a more secure and sustainable future
• APEC/APERC Peer Reviews of Energy Efficiency (PREE) expected to help make these efforts more effective
• China’s energy efficiency efforts the subject of two APERC studies
  – 11th Plan for Economic and Social Development: 20% reduction in energy intensity (TPES/GDP) from 2006 to 2010
  – Backed-up with a comprehensive set of policies as well as commitments by regional governments and enterprises
  – Similar goals under consideration post-2010
• Big push for renewable and nuclear energy as well
Expected Conclusion #7: New Technologies

- Potential of new technologies often underestimated
- Example: Solar photovoltaics (PV) has historically been expensive and uncompetitive with fossil fuels, but
  - It is declining rapidly in cost
  - Given that it is a semiconductor-based technology, these cost declines are likely to continue
  - Only needs to compete with the retail electricity price
- Solar PV now attracting large private sector investments
  - Venture capital and established companies
  - China becoming a big player
- If successful, solar PV could be a renewable electricity source available almost anywhere in almost unlimited quantities
- Keys to success:
  - Supportive regulatory policies
  - Supportive policies for new technology and entrepreneurship
Projected Cost of Solar PV in New Zealand

Discussion

- Questions and Comments?