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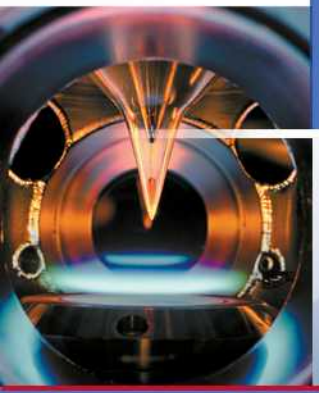
The Energy Water Model

John A. Merson, Vince C. Tidwell,
Peter H. Kobos and Len A. Malczynski,
and many others



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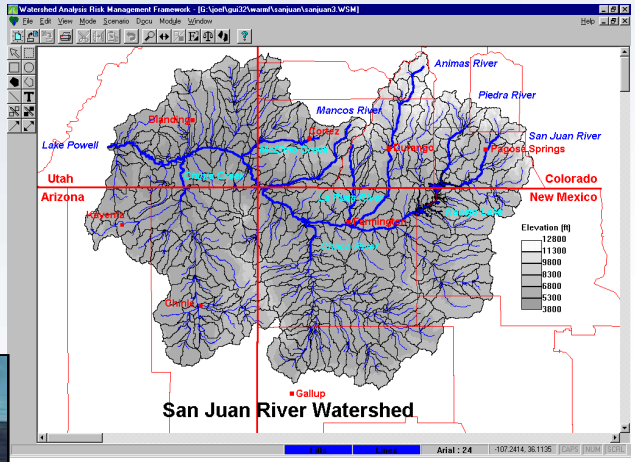
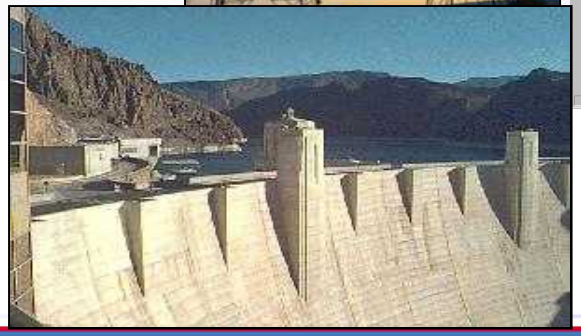
Decision Support for Integrated Water-Energy Planning (IWEP)

Laboratory Directed R&D





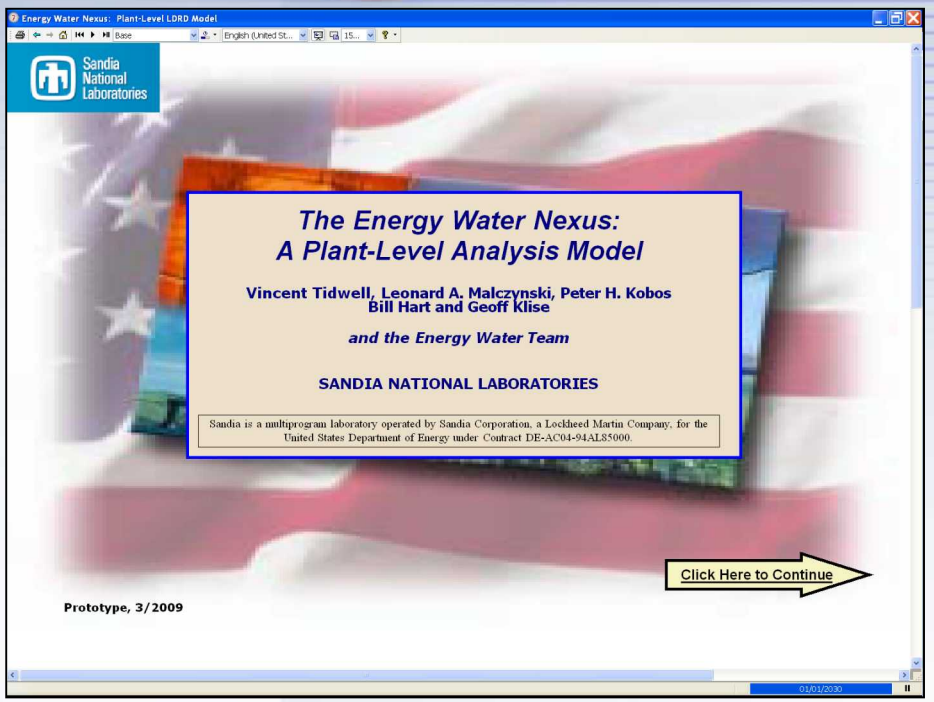
Energy Water Modeling:
An Abbreviated Model Demonstration

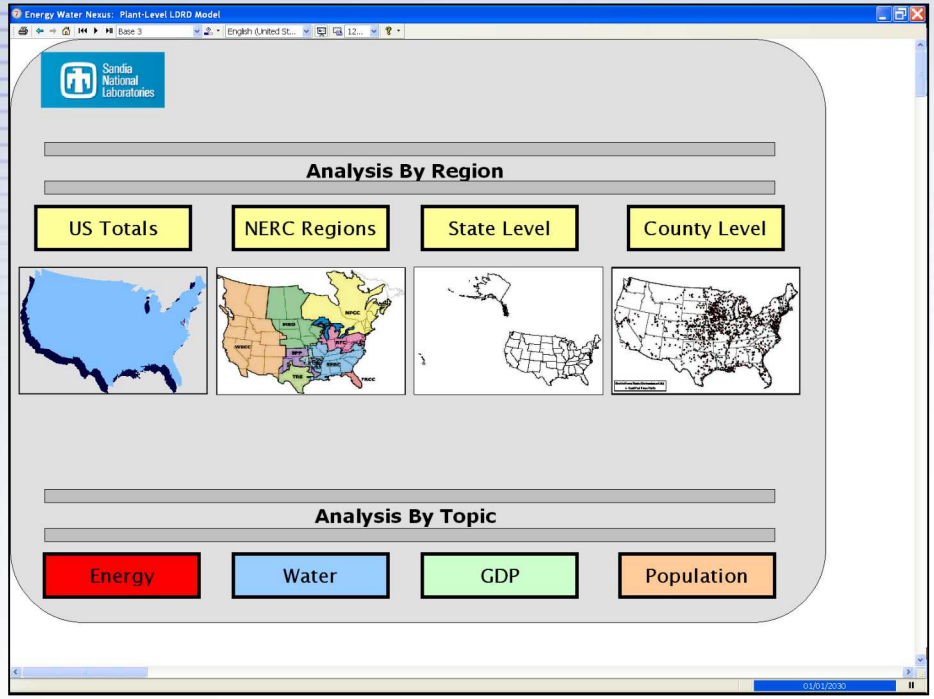
1. **Purpose of the Model**
2. **Energy and Water Technology & Decision Options**
   - **Power Plant Level Cooling Types**
   - **Water Consumption and Withdrawal**
   - **Fuel Portfolio**
   - **Competing Water Demands**
3. **National Level, NERC, State, County-Level Analysis**
4. **Scenario Analysis**

Energy Water Modeling:
An Abbreviated Model Demonstration

1. **Decision Support for Integrated Water-Energy Planning: Plant-Level Analysis Model**
   - Similar in spirit to the Feeley et al. (2008) paper; "Water: a critical resource in the thermoelectric power industry. Energy, Volume 33, Issue 1, January 2008, Pages 1-11."
   - Scalable from National to Plant Level
   - Integrate Innovation efforts for Existing Plants
2. **Tool to inform decision makers on interdependencies among emissions, cost of fuel and power, water consumption**

Integrated Water-Energy Planning:
"Plant-Level Analysis Model"





Integrated Water-Energy Planning:
"Plant-Level Analysis Model"

Water Demand by Sector

- *Summaries and Detail: from the National Level to the Power Plant*
- *GDP, Population Growth Changes*
- *Technology Deployment Scenarios*

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SUMMARY
Integrated Water-Energy Planning: *"Plant-Level Analysis Model"*

Addressing Customer Requests:

- Dynamic Base and Scenario Runs
- Easy-to-Use Interfaces
- Exportable Results to GIS and EXCEL
- Transparent Assumptions

Building in:

- CO_2 and other emissions
- Costs / Prices
- Optimization abilities