

# Overarching Issues Sub-Committee

– *An Initial Framework for Discussion*



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U.S. Department of Energy  
Office of Science Advanced Scientific Computing Advisory Committee  
Meeting -- October 25-26, 2001

# Initial Charge to Committee from J. Decker<sup>1</sup>

*Review two specific topics*

## **Facilities** (ERSC, ESnet, ACRT's,...) (J. Dahlburg)

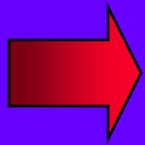
- What is their overall quality?
- How do they relate to mission needs?
- How might the facilities evolve 3-5 years?

## **Computational Biology** (J. Meza)

- Assess areas where ASCR could have impact
- How to couple ASCR research with biology community

<sup>1</sup> Letter addressed to Margaret H. Wright dated 19 April 2001

# Context for Discussion -- Office of Science



1. **Advanced Scientific Computing Research**
2. **Basic Energy Sciences**
3. **Biological and Environmental Research**
4. **Fusion Energy Sciences**
5. **High Energy and Nuclear Physics**

# Context for Discussion -- Budget

<b>DoE Office of Science</b>	<b>Budget</b>	<b>Computing</b>	<b>(%)</b>
	<b>\$ Million</b>	<b>\$ Million</b>	
Advanced Scientific Computing Research (ASCR)	300	160	53
Basic Energy Sciences	1,000	10	1
Biological and Environmental Research	450	30	7
Fusion Energy Sciences	250	10	4
High Energy and Nuclear Physics	1,000	20	2
<b>Total</b>	<b>3,000</b>	<b>230</b>	<b>8</b>

## For DoE Office of Science

1. ASCR budget \$300 million is 10% of total Office of Science budget
2. Computing \$230 is 8% of total Office of Science budget
3. Advanced Scientific Computing Infrastructure (ASCI) budget is ~\$750 million

# A Few Observations from Initial Meetings

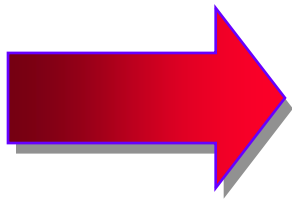
1. High performance computation is a critical enabling technology for all DoE Missions
2. Computing is more than hardware it must include
  - Modeling/problem solving environments
  - Operating Systems
  - Algorithms and software
  - Networks, communication
  - Analysis, interpretation storage of data
  - Data assimilation/control of experiments
  - Etc.
3. Huge and growing diversity of applications areas with many commonalities that could be exploited
4. Critical role of user support in migration to a new computational science paradigm
5. etc.

# A Few Questions from Initial Meetings

1. Computing is vital to meeting DoE Missions but where is the high level vision for the role computing within the Agency?
2. How to make most effective use of the diverse skills/experience of DoE in emerging missions of DoE and other agencies e.g. “Genome to Life”?
3. How best to demonstrate the “value” of DoE’s investment in computing to Congress, the Public, to other scientists,.....
4. etc

# Implications of Observations/Questions

- Many important issues require that we should look beyond just Office of Advanced Scientific Computing Research (ASCR)
- We should coordinate our work with the Review Committees of the other offices within the Office of Science



Discussion with Jim Decker lead to formation of a composite panel to assess computing needs across the five Office of Science programs

# Key Points in Letter from J. Decker<sup>1</sup>

*Provide Advice to Director on*

1. High performance computing needs
2. Management issues
3. Funding requirements

*“...The panel may exercise wide latitude while conducting this study but should address some specific topics...(on next page)”*

<sup>1</sup>. Letter addressed to Margaret H. Wright dated 24 August 2001



# Key Points in Letter from J. Decker<sup>1</sup>

## Assess

1. The overall quality of facilities...throughout the Office of Science
2. Effectiveness of interactions and resource sharing
3. Evolution of roles of these facilities and their distribution over the next 3-5 years
4. Useful metrics to measure progress and guide investment decisions

<sup>1</sup>. Letter addressed to Margaret H. Wright dated 24 August 2001

# So where do we stand and what's next?

- Reports
  1. January 11, 2002 This committee
  2. September 1, 2002 Composite committee
- Specific Proposal is to form a Sub-Committee from our membership that has two objectives
  1. Write a section for the January report that identifies some of the more important “big picture” issues/ questions together with some preliminary recommendations
  2. Help frame and structure the issues to be addressed by the composite committee

# Outline for Material for January Report

## Introduction - A Few Brief Paragraphs

- Importance of computing to meeting the DoE's missions.
- Computing should be interpreted and funded more broadly than just the hardware.
- Value to the Nation of the DoE human resource/ experience base in tackling new and emerging missions

## Key Issues and Preliminary Recommendations

- Issue 1 and recommendation
- Issue 2 and recommendation
- ...
- Issue 5 and recommendation

# Discussion Agenda for Today/Tomorrow

1. Identify the “big” picture issues/questions, what are they?
2. Prioritize the Issues
3. Suggest the recommendations
4. Discussion/definition of charter for composite committee



**What do you think?**