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Folder Title:
DOE Battery Consortium 10/17/91 [OA 8330]

Stack:	Row:	Section:	Shelf:	Position:
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THE WHITE HOUSE
WASHINGTON

Date: 10/8/91

TO:

111/2 OEOB
CAROL AARHUS

FROM:

JAMES A. FITZHENRY
Associate Director
Office of Cabinet Affairs
Room 239, OEOB, x2800

ATTACHED IS SOME BACKGROUND
MATERIAL ON THE BATTERY CONSORTIUM
EVENT. I WOULD SUGGEST THAT
YOU SPEAK W/ KATHY JEANOUS AND
ME BEFORE YOU DO A DRAFT. THE
DOE MATERIAL IS AND TALKING POINTS

THE WHITE HOUSE

WASHINGTON

SCHEDULE PROPOSAL

July 18, 1991

TO: KATHY SUPER
DEPUTY ASSISTANT TO THE PRESIDENT FOR
APPOINTMENTS AND SCHEDULING

FROM: EDE HOLIDAY
ASSISTANT TO THE PRESIDENT AND
SECRETARY OF THE CABINET

DAVID F. DEMAREST, JR.
ASSISTANT TO THE PRESIDENT FOR
COMMUNICATIONS

REQUEST: To address representatives of a new DOE-GM-Ford-Chrysler research and development consortium dedicated to developing viable electric vehicles. The event also would include a test drive of an electric vehicle prototype.

BACKGROUND: To highlight the President's aggressive R&D agenda and commitment to developing renewable and environmentally sound energy resources as an integral component of the National Energy Strategy.

The National Energy Strategy and the FY 1992 budget call for federal government participation in a new consortium of U.S. automakers that seeks to develop car batteries for electric vehicles. The federal government will fund a portion of the research and DOE scientists will work with industry personnel on the project.

DATE AND
TIME: Week of October 14th (day and time TBD).

LOCATION: Detroit, Michigan. (The consortium will not establish a separate research facility; however, each of the three automakers could bring a vehicle prototype to a designated location).

PARTICIPANTS: The President, Secretary Watkins, Industry Officials, others TBD.

OUTLINE OF
EVENTS: TBD

REMARKS: To be provided by speechwriters.

MEDIA
COVERAGE: Open.

PROJECT
OFFICER: Jim Fitzhenry (x2800).

THE WHITE HOUSE

WASHINGTON

August 1, 1991

MEMORANDUM FOR EDE HOLIDAY

FROM: JAMES A. FITZHENRY

SUBJECT: Additional Information on the Battery Consortium
Schedule Proposal

The proposed October event in Detroit addressing representatives of the DOE-GM-Ford-Chrysler battery consortium should be supported for the following reasons:

- 1) Addressing representatives of the "Big Three" automakers about their consortium agreement will highlight recent (and future) efforts to develop viable electric car batteries and vehicles. The event will also involve the display of the latest electric vehicle prototypes, and perhaps a test drive.
- 2) The event will highlight the increasing importance the Administration, through the National Energy Strategy (NES), is placing on renewable, non-polluting sources of energy. Both the NES and the Administration's FY 1992 budget call for federal government participation in a new consortium of U.S. automakers that seeks to develop car batteries for electric vehicles. The event would also stress the NES theme of reducing our vulnerability to unreliable sources of energy.
- 3) The event could also have a science and technology theme, providing an opportunity for the President to advance both the NES and Education Initiative.
- 4) Like the SERI event, this event will help keep aspects of the NES in the media and will provide a needed focus away from ANWR.
- 5) The issue here should not be whether electric vehicles will be able to play a major role in meeting our transportation and energy needs. There are legitimate arguments on both sides of this "efficacy" debate. Our purpose is political, to answer the critics in Congress and elsewhere that fault the NES for not stressing conservation and alternative, renewable sources of energy. This event is yet another step to answer that criticism.
- 6) We accomplish two goals simultaneously, keeping the NES from being viewed strictly in terms of ANWR and highlighting the fact that the NES is a balanced proposal that includes conservation and renewable energy provisions.

The push for

EPRI

Advanced Batteries

Thomas Edison and Charles Steinmetz—the greatest electrical geniuses of their time—are said to have tried and given up on developing high-power, long-life, inexpensive batteries that would enable EVs to squarely compete with gasoline-powered vehicles. Then, as now, the only commercially available battery technology suitable for EVs was lead-acid, and though modern versions may last longer and cost somewhat less than those at the turn of the century, the performance and range afforded by lead-acid batteries have not improved much.

Battery makers and other technology companies (including several with support from EPRI) have been working on an array of new materials and types of batteries for over 25 years. But in the absence of established market demand for such advanced batteries, those efforts have not been sufficient to overcome the technical, manufacturing, and economic barriers to a truly practical EV battery. Many interested parties are counting on the recently formed U.S. Advanced Battery Consortium to marshal technical and financial resources for a focused, collaborative R&D program to identify and develop several mid- and longer-term EV battery technologies later in this decade. Some of the ongoing battery R&D sponsored by the Department of Energy and EPRI could become part of the USABC program.

From more than half a dozen candidate battery technologies, the apparent consensus among USABC sponsors is to focus on demonstrating the feasibility and capability of processing and producing sodium-sulfur batteries at pilot plant scale by 1994. By then, the consortium also wants to have demonstrated, with a full-size experimental battery, the feasibility of designing a plant to manufacture the even more advanced lithium-metal disulfide and lithium-polymer batteries.

Mature batteries

Today's lead-acid battery packs limit an EV such as the G-Van to about 60 miles on

an 8-hour charge. With advanced design and materials for maximum aerodynamic efficiency, General Motors' Impact concept car manages to stretch the projected range of its one-third-lighter battery pack to 120 miles. A nickel-iron battery offers one and a half to two times the vehicle range of lead-acid, but at an increased cost. And such a battery is not expected to be commercially available until 1993 or 1994.

According to Robert Swaroop, project manager for EV battery systems at EPRI, "Battery cycle life is the key trade-off with other performance factors." The benchmark lead-acid batteries of today will last for about 30,000 miles with deep discharging cycles and even longer with light use and frequent opportunity charging. The cycle life of today's lead-acid batteries is about 750. A battery with a de-

The widespread success of electric vehicles depends primarily on the development of advanced batteries that can deliver improved driving range and performance. While the earliest EVs on the road are likely to operate on large packs of conventional lead-acid batteries, researchers are exploring advanced batteries based on sodium-sulfur, lithium-metal sulfide, and even more exotic electrochemical combinations; the goal is to commercialize the most successful of these later in the decade.

sign target of 1000 operating cycles might power an EV for 60,000 miles before requiring replacement. All of the advanced technologies offer significantly greater performance over lead-acid in terms of energy and power, and the best projections of operating life for most of them also exceed lead-acid's life.

Another key consideration for EV batteries is maintenance. Lead-acid batteries can be made maintenance-free, like those found today in many gasoline vehicles, and such batteries may soon become available for near-term EV application. EPRI is testing maintenance-free, sealed lead-acid batteries from the German manufacturer Sonnenschein at Argonne National Laboratory. Nickel-iron batteries must include a system for regular watering and the removal of hydrogen gas generated during recharging. There is a novel

but promising bipolar version of a sealed lead-acid battery under development by ENSCI, Inc., with support from the Jet Propulsion Laboratory and Southern California Edison. Compared with nickel-iron, it offers improved efficiency and performance.

In addition to lead-acid and nickel-iron, relatively mature battery technolo-

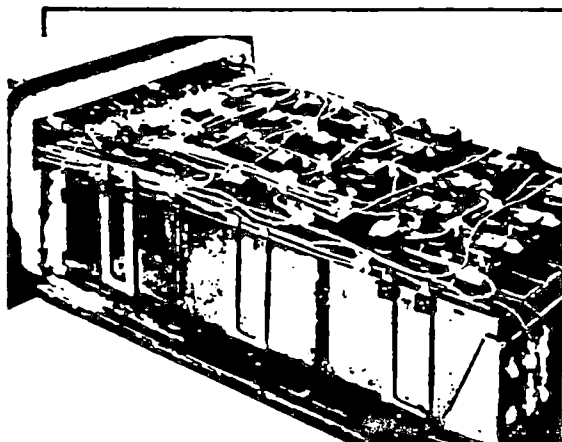
gies include nickel-cadmium, on which Japanese and European manufacturers are known to be working. A nickel-cadmium unit made by the French battery maker SAFT is under test at Argonne, but such batteries are expected to remain prohibitively expensive for EV application, and there are disposal issues associated with cadmium's toxicity.

Developmental batteries

To achieve significant gains in EV range, batteries must be made from much more energetic electrode materials than lead or iron. The electrochemical couples of sodium and sulfur (Na/S) and lithium-aluminum and iron sulfide (LiAl/FeS_x) have the desired specific energy, but both must operate at high temperatures.

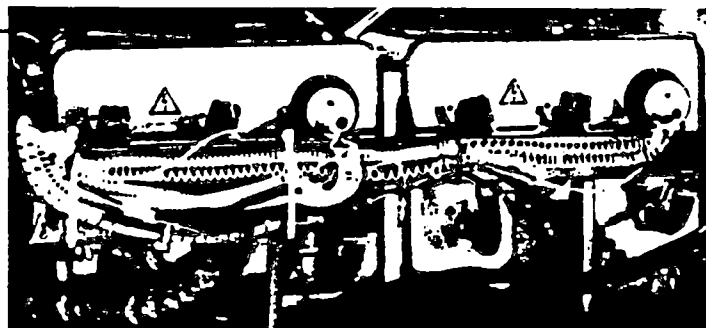
How Advanced Battery Technologies Compare With Lead-Acid

Researchers state the potential vehicle range and acceleration power of advanced battery systems under development in relative terms to today's conventional lead-acid batteries. Depending on the vehicle, the number of batteries it is designed to carry, and the driving duty, lead-acid batteries can power EVs for 50–100 miles on a single charge and can provide acceleration that approaches that of conventional gasoline vehicles. At high-volume production, some of the advanced battery technologies are expected to approach lead-acid batteries in cost. Numerous test EVs have already run on prototype nickel-iron and sodium-sulfur batteries, which are now at the pilot plant stage of manufacturing development. Multicell modules of lithium-iron monosulfide batteries have been made, but researchers say it is the disulfide version of the technology—still at laboratory scale—that offers the potential for an EV driving range of over 300 miles. Potentially lighter-weight, solid-state lithium-polymer batteries are also under development.

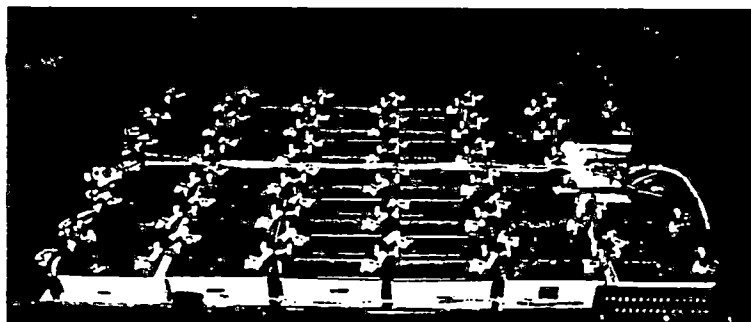


Lithium-iron monosulfide subbattery pack

Developmental sodium-sulfur battery pack



Nickel-iron battery pack



Lead-acid battery such as used in the G-Van



	Relative Energy Capacity (range)	Relative Peak Power	Availability
Lead-acid	1.0	1.0	High
Nickel-iron	0.5	0.5	Medium
Nickel-cadmium	0.5	0.5	Medium
Lithium-iron monosulfide	0.5	0.5	Low
Sodium-sulfur	0.5	0.5	Low
Lithium-polymer	0.5	0.5	Low

Researchers believe that Na/S batteries offer the best hope of providing EVs a potential range of 150–175 miles by the end of this decade. Developed originally by General Electric in the 1960s and later, in the 1970s, by Ford Motor Company, the Na/S battery uses a ceramic beta-alumina electrolyte tube with sodium negative and molten sulfur positive electrodes on opposite sides within a sealed, insulated container. The battery pack itself is further insulated, since Na/S modules operate at 350–380°C (662–716°F). Because of both the operating temperature and sodium's reactivity, the batteries must be designed with a high degree of ruggedness and safety.

The two principal developers over the past two decades have been Britain's Chloride Silent Power, Ltd., and the Swedish-Swiss conglomerate ABB Asea Brown Boveri (including its Canadian subsidiary, Powerplex). ABB has a pilot plant in Germany, and Chloride has formed a joint venture with the German utility RWE for a pilot plant in Britain to manufacture Na/S batteries.

Several test vehicles, including experimental Ford electric vans and a fleet of German passenger cars, have been running on batteries from these suppliers. DOE and EPRI have supported development work at Chloride and are testing Na/S batteries at Argonne and the Electric Vehicle Test Facility in Chattanooga, Tennessee.

Although they currently cost at least four times as much to produce as nickel-iron batteries, Na/S batteries have low projected volume production costs—thanks to inexpensive materials—and a long projected service life. Only ABB's battery has yet demonstrated over 1000 operating cycles for full-size modules, however.

Argonne National Laboratory originally developed the LiAl/FeS_x system in the early 1970s. Using more-expensive but nonreactive materials, the battery's key advantage over Na/S is greater safety. It uses a porous magnesium oxide

or boron nitride separator and a potassium and lithium chloride electrolyte, and it maintains the electrodes at an operating temperature of 400–450°C (750–842°F). SAFT America, a subsidiary of the French battery company, is the leading developer of this technology today and is being funded by DOE and EPRI to scale up the Argonne technology, which has received considerably less R&D support than Na/S.

Researchers are particularly interested in a disulfide version of the LiAl/FeS_x battery for its potential to boost the range of EVs to over 300 miles. "But that's at least 12 years away," says EPRI's Robert Swaroop. "First we have to solve the problems of lithium monosulfide batteries, which today are cycle life and calendar lifetime." Lithium batteries are widely used in a number of special military applications, "but it will be tough to make them big and powerful enough for EVs," adds Swaroop. Researchers hope to see a few proof-of-concept lithium monosulfide EV batteries by 1993 or 1994.

EV batteries for the long term

Perhaps the ultimate, 300-mile-plus, rechargeable EV power supply envisioned by some researchers would be the lithium-polymer battery, operating from ambient temperature to 120°C (248°F) and easily manufactured in versatile thin films usable in a variety of configurations. Recent advances in the new materials science of conducting polymers are incorporated in the form of a plastic-like solid electrolyte. Such solid-state batteries are at a very early stage of development and are presently being made in small sizes and low power ratings.

One of the leading efforts on lithium-polymer batteries is a joint venture recently formed between Canada's Hydro Québec and Japan's Yuasa Battery Company to develop the technology to full scale. A small, laboratory-scale version of the battery has recorded more than 500 operating cycles over two years. Swaroop says a major challenge in scaling up lith-

R&D Consortium for EV Batteries of the Future

U.S. automakers Chrysler Corporation, Ford Motor Company, and General Motors Corporation have formed the U.S. Advanced Battery Consortium as a collaborative R&D venture to identify and develop the most promising advanced battery technologies for future electric vehicles. The USABC is soliciting support from the government and the electric utility industry for what it hopes will become a \$100-million-a-year effort by 1993. The U.S. Department of Energy is expected to provide a major portion of the program's funding support. EPRI expects to support the USABC and participate in the research consortium on behalf of electric utilities through a cooperative agreement.



**UNITED
STATES
ADVANCED
BATTERY
CONSORTIUM**

ium-polymer batteries is to find a way to dissipate the heat generated during charging and discharging without causing long-term damage to the polymer electrolyte. Other groups in Britain, Japan, and the United States are working on lithium-polymer technologies. EPRI supports a small part of some of this work in connection with its long-term R&D program for EV batteries. ■

This article was written by Taylor Moore. Technical information was provided by Robert Swaroop, Customer Systems Division.



RELEASE 10:00 A.M. (EST) THURSDAY, JAN. 31, 1991

CHRYSLER, FORD, GENERAL MOTORS FORM ADVANCED BATTERY RESEARCH CONSORTIUM

DETROIT, Jan. 31 -- Chrysler, Ford and General Motors have formed a research consortium to evaluate and develop advanced battery technologies for use in electric vehicles.

Consortium members signed the agreement yesterday.

The new venture, called the United States Advanced Battery Consortium (USABC), is designed to develop advanced energy systems capable of providing future generations of electric vehicles with significantly increased range and performance.

The USABC has been working closely with the U.S. Department of Energy (DOE), the electric utility industry of the United States, and the Electric Power Research Institute (EPRI) in developing the program. The DOE anticipates that widespread use of electric vehicles in the U.S. could provide an important alternative to petroleum consumption, enhance the environment and contribute to the competitiveness of domestic battery and vehicle manufacturers. It is anticipated that a cooperative development and funding arrangement will be formalized to include the USABC, the electric utilities, the DOE, battery companies and Government laboratories. Research and development will be focused on advanced battery systems determined by the consortium to have the greatest potential for commercialization.

By assembling a consortium, the manufacturers feel that they can identify the most promising technological alternatives and concentrate research and development efforts in those areas. They consider it the most efficient and least costly way to proceed. The findings of such research will be shared equally among the consortium members.

Under the terms of the agreement, research and development projects can be conducted under contract to the consortium by battery manufacturers and other non-member parties.

The manufacturers emphasized that this is not a joint vehicle research program and that it does not involve joint battery production. Rather, they said, it is a collective effort to identify quickly the best options for development of an increased-range battery system.

Chrysler • Ford • General Motors

- 2 -

The U.S. Justice Department Antitrust Division and the Federal Trade Commission, under the National Cooperative Research Act, have been notified of the consortium.

Research will begin shortly and the consortium hopes to have preliminary results within three years.

#

Contact: Beryl Goldsweig
Ford Motor Company
(313) 337-2456

Jason Vines
Chrysler Corporation
(313) 956-5346

Don Postma
General Motors
(313) 986-5715

FOR USE ON INQUIRY

Advanced Battery Consortium Q and A

Q. Why has the Advanced Battery Consortium been formed?

A. To establish a capability for a United States advanced battery manufacturing industry.

To accelerate market potential of electric vehicles by jointly researching the most promising advanced battery alternatives.

To provide electrical energy systems capable of providing future generations of electric vehicles with range and performance competitive to those of current vehicles.

To leverage external funding for high risk, high cost advanced battery research and development for electric vehicles.

Q. Why can't such research be undertaken by the companies individually, rather than through a consortium?

A. Development of a commercially viable battery energy system takes significant resources. There is no clear advanced battery choice at this time for broad electric vehicle application. To sufficiently develop the many alternatives to the point of selecting the best alternative is probably beyond the resource capabilities of any individual manufacturer or technical group. A consortium focuses collective efforts and directs them toward the best options for commercialization.

Q. EPRI, the research and development arm of the electric utility industry, and SCE have been mentioned as possible consortium members in earlier, unconfirmed reports. What is their status?

A. We are talking with EPRI and SCE concerning possible membership. Progress is being made, but it is too early to say for certain whether or not they will be members.

Q. What role will the Department of Energy play?

A. DOE participation could include providing funding, conducting research at national laboratories, or having the consortium conduct research for them in areas of related interest.

- 2 -

Q. How will the consortium work?

A. A Partners Committee, with one executive representing each Partner, will oversee the policies, guidelines and business plans of the Partnership. The Partners Committee will meet at least annually. The day to day operations of the Partnership are delegated to a Management Committee.

The Management Committee will meet at least quarterly, and be comprised of two senior managers from each Partner in the consortium.

It is envisioned that the Management Committee will establish Work Groups. The Work Groups' assignments on advanced batteries will include both product and manufacturing processes. This research and development will be conducted by or through the Partnership and may include battery manufacturers, the Government's national laboratories, and other non-consortium entities. The Work Groups also will address such issues as infrastructure needs, battery recycling, energy and environmental impact, safety and standardization for each advanced battery technology.

The initial focus of the Working Groups will be to identify and recommend battery technologies for intense research and development.

Q. To what extent would DOE help fund the consortium efforts? How much is each auto company contributing? How much are EPRI and SCE?

A. Final funding arrangements have yet to be determined. Present plans anticipate equal funding from government and industry.

Q. Would GM's share be largest, Chrysler's smallest?

A. Contributions will be in proportion to U.S. vehicle shares.

Q. What is the projected funding?

A. We hope to raise funds leading to \$100 million a year by 1993 and for the succeeding years. For 1991, we hope to be at \$35 million.

Q. Will the chairmanship rotate annually among the three companies?

A. There will be three primary positions, rotated annually among the three auto companies: a chairman, an external affairs officer, and a treasurer. The chairman is responsible for the administrative and operational leadership of the consortium programs. The external affairs officer is responsible for public positions and interface with government representatives. The treasurer handles financial matters.

For the first year, the chairman will be Kenneth R. Baker, Manager, Electric Vehicles (GM); the external affairs officer will be John R. Wallace, Director, Electric Vehicle Programs (Ford); and the treasurer will be Robert L. Davis, Program Executive, Special Projects Engineering (Chrysler).

- Q. How long will the consortium last?
- A. The initial agreement calls for the Partnership to run 12 years, although a Partner, at its discretion, may withdraw at any time.
- Q. What will happen to any battery advances made by companies on their own, not as part of the consortium?
- A. Each partner retains the freedom to continue its own individual battery R&D.
- Q. What will happen to any breakthrough technology developed through the consortium efforts?
- A. If the technology is developed by a contractee, we expect that consortium members will have the opportunity to use the technology under a licensing agreement. The intent, of course, is to make the technology available for mass production.
- Q. Will the consortium seek additional membership? Who might these members be -- what kinds of organizations?
- A. Members of the electric utility industry would seem to be a natural choice.
- Q. Can other auto companies join?
- A. That is not anticipated.
- Q. Can battery manufacturers join?
- A. The intent is to contract with battery manufacturers and other interested parties to focus technology efforts. As such, battery manufacturers will participate through these contracts and not directly as members of the consortium.
- Q. Might there be other consortia following this one?
- A. Where it makes sense, future joint efforts will be considered.
- Q. Would the consortium minimize competition among automakers?
- A. No. This is research in vehicle fuel and storage systems, areas where we do not compete even on today's internal combustion engines. We remain competitors in electric vehicle commercialization.

Q. When do you expect to have research results available?

A. Initial research results should be available within three years. The findings of all the research efforts will be shared among the consortium members.

Q. Is there any possibility of opening in the near term a joint facility for the research and development of ultra-clean vehicle technologies?

A. No.

Q. When will the contracts be awarded?

A. It is too early to tell, but it is unlikely that any agreements will be reached before early summer (June).

* * *

1/30/91
ABCQA

U.S. ADVANCED BATTERY CONSORTIUM

June 12, 1991

USABC MILESTONES

- | | |
|-----------------------|--|
| April 1990 | - Preliminary Discussions DOE/GM |
| July 1990 | - Follow-up Discussions DOE/GM |
| July/August 1990 | - Jack Simon Develops GM/Ford/
Chrysler Interfaces |
| October 1990 | - Consortium Presentation to DOE |
| November 1990 | - "Head's Up" by DOE to OMB and
Congressional Staffs |
| November 1990 | - DOE Participation in Utility
Companies' Presentations |
| November 1990/Present | - DOE Participation in Weekly/
Biweekly Meetings |

USABC MILESTONES - CONT.

January	30	- Partnership Agreement Signed
January	31	- Technical Advisory Comm. Formed
March	4	- Partnership Agreement Legal - Department of Commerce Clearance
April	4	- Request Battery Concepts from Industry & Laboratories (Pre-proposal)
April	15	- Unsolicited Proposal from Consortium Submitted to DOE
April	19	- Presentations by DOE Laboratories at USABC
May	1	- Pre-proposal Responses Received
July	1	- Battery Candidates Selected
August/September		- Anticipated Contract Signing Between USABC and DOE

Requests for Pre-Proposals Issued - April 4, 1991

- 105 Total
 - 9 Government Labs (8 DOE)
 - 96 Industry
 - Battery Manufactures
 - Chemical Companies
 - Petroleum Companies
 - Aerospace Companies
 - Emphasizes Cooperative Arrangements Between Companies and Laboratories

U.S. Advanced Battery Consortium

Objectives of Consortium

- **Establish capability for U.S. advanced battery manufacturing industry**
- **Accelerate market potential of EVs by jointly researching the most promising advanced battery alternatives**
- **Develop "electric systems" capable of providing EVs with range and performance competitive with conventional petroleum-based systems**
- **Leverage funding for high-risk, high-cost advanced battery R/D for EVs**

U.S Advanced Battery Consortium Organization

- 3 partners: GM, Ford & Chrysler
- Partner's Committee
 - policy, business, planning meets annually (Board of Directors)
- Management Committee
 - provides requirements, priorities, allocates funding
- Working Groups
 - 3-one for each battery - led by auto industry
- EPRI and Southern California Edison will join as associate partners (partners if possible)
- DOE role executed thru contractual relationships - Design of cooperative agreement coordinated with Department of Commerce

CANDIDATES FOR DEVELOPMENT

(Preliminary)

Mid-Term

By CY'94 production feasibility and processing capability demonstrated by limited run prototype production in a pilot plant. Performance by full-scale vehicle tests of experimental batteries.

- Sodium-sulfur
- Sodium-metal chloride
- Nickel-iron
- Zinc-bromine

Long-Term

By CY'94 design feasibility as demonstrated by full-scale vehicle tests of experimental batteries.

- Iron-air
- Zinc-air
- Aluminum-air
- Lithium-polymer
- ← • Lithium-metal sulfide

How the Auto Industry Sees Advanced Batteries

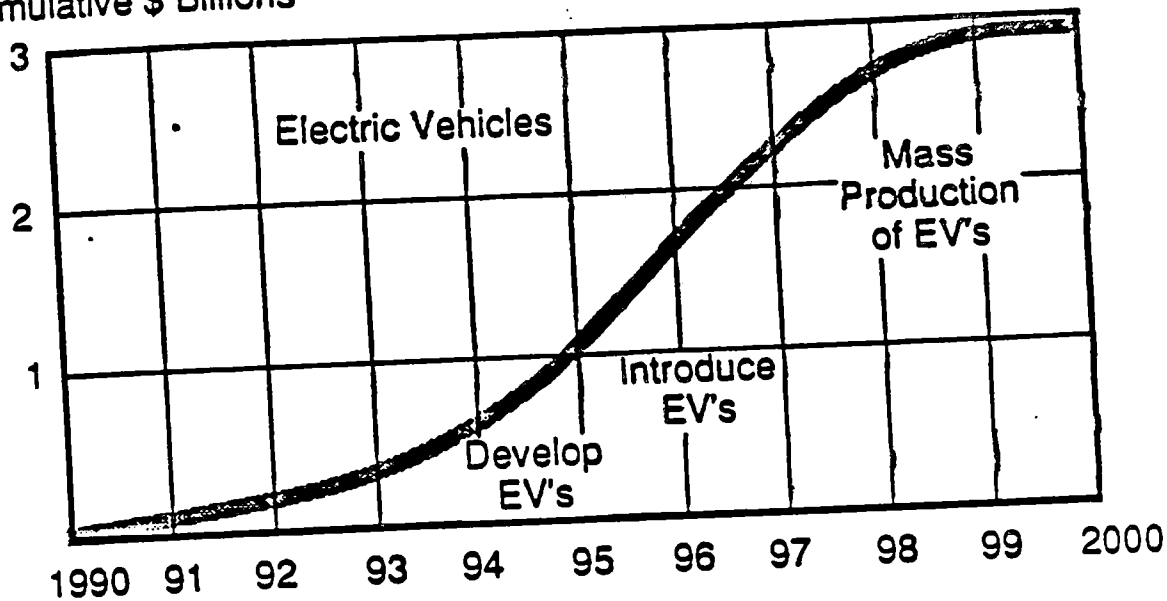
- **Auto industry considers electricity as an alternative fuel, like ethanol or methanol**
- **No intention either to produce new fuels for conventional vehicles or batteries for electric vehicles; rather, for EV's the intention is to buy these components from battery developers/suppliers who join the development effort**

PROPOSED FUNDING (\$ Millions)

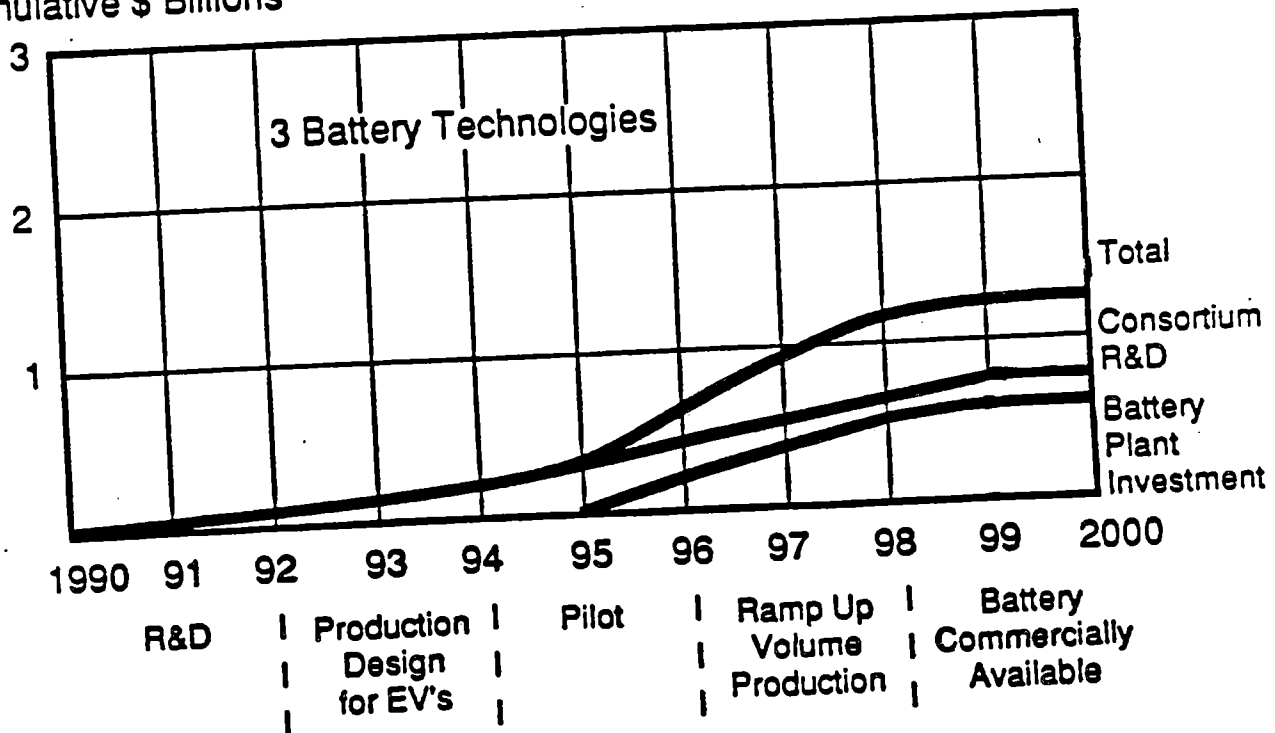
	Calendar Years				
	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>
Auto Industry	4.5	9.0	13.5	17.0	?
Utilities/EPRI	4.5	9.0	13.5	17.0	?
Battery	4.5	9.0	13.5	16.0	?
Manufacturers	-----	-----	-----	-----	-----
Subtotal	13.5	27.0	40.5	50.0	?
DOE (50/50)	13.5	27.0	40.5	50.0	?
Totals	-----	-----	-----	-----	-----
	27.0	54.0	81.0	100.0	?

PROBABLE INVESTMENT (CUMULATIVE) FOR ELECTRIC VEHICLES AND BATTERIES (3 DOMESTIC CAR COMPANIES)

Cumulative \$ Billions



Cumulative \$ Billions



ENVIRONMENTAL ISSUES

USABC GROUND RULES

Environmental Issues Will Be Adequately Addressed

- **When selecting candidates for development**
- **During system research and development**
- **During Manufacturing - Employee Safety & Health**
- **When recharging**
- **Ultimate disposal or recycling**

"No more environmental problems with new propulsion systems"

OFFICE OF THE DEPUTY SECRETARY 002

**Announcement of Agreement Between
The United States Advanced Battery Consortium
and the U. S. Department of Energy
Greenfield Village
Dearborn, Michigan
Thursday, October 17th, 1991**

Schedule of Events

9:45 a.m. All participants, including press, TV and radio in place. Automobile battery display (possible mounted on a chassis skeletal frame work of a concept vehicle) set near podium under a banner bearing the slogan "Partnership for the 21st Century." Electric vehicles off to one side, out of immediate camera range. (Invitees attached.)

9:50 a.m. Cabinet officials and CEOs of GM, Ford and Chrysler arrive.

10:00 a.m. President Bush arrives.

10:04 a.m. Ken Baker, Chairman of Battery Consortium, welcomes participants, introduces Harold Poling, Ford CEO.

10:06 a.m. Harold Poling makes brief remarks.

10:08 a.m. Lee Iacocca, Chrysler CEO, makes brief remarks.

10:10 a.m. Bob Stempel, GM CEO, makes brief remarks. Introduces President Bush.

10:12 a.m. President Bush makes brief remarks. (Talking points attached). Announces agreement between DOE and the Battery Consortium.

10:20 a.m. President Bush witnesses signing ceremony by Secretary of Energy Watkins and 3 auto company CEOs.

10:23 a.m. Group photo opportunity inspecting batteries.

10:30 a.m. President Bush departs.

10:35 a.m. CEOs and Cabinet officials have brief Q/A with media.

**Announcement of Agreement Between
The United States Advanced Battery Consortium
and the U. S. Department of Energy
Thursday, October 17th, 1991**

Government Participants

The Honorable George Bush, President
Richard Darman, Director, OMB
D. Allan Bromley, Assistant to the President for Science and
Technology
Admiral James Watkins, Secretary of Energy
Samuel Skinner, Secretary of Transportation
Robert Mosbacher, Secretary of Commerce
William Reilly, Administrator of EPA
John Engler, Governor of Michigan
J. Michael Davis, Assistant Secretary, Conservation and Renewable
Energy

Industry Participants

Robert Stempel, General Motors
John Bryson, Southern California Edison
Lee Iacocca, Chrysler Corporation
Harold Poling, Ford Motor Company

Consortium Representatives

Kenneth Baker, Chairman USABC, General Motors
Frank Jamerson, Secretary USABC, General Motors
Robert Dietch, Southern California Edison
Robert Davis, Financial Officer USABC, Chrysler Corporation
John Wallace, External Affairs USABC, Ford Motor Company

Congressional Participants

Senator Bennett Johnston, Chairman, Senate Energy and Natural Resources
Committee
Senator Malcolm Wallop, Ranking Minority Member, Senate Energy and
Natural Resources Committee
Cong. John Dingell, Chairman, House Energy and Commerce Committee
(Cong. Dingell represents Dearborn, Michigan, District 16.)
Cong. Norm Lent, Ranking Minority Member, House Energy and Commerce
Committee
Cong. Philip Sharp, Chairman, Subcommittee on Energy and Power,
House Energy and Commerce Committee
Cong. Carlos Moorhead, Ranking Minority Member, Subcommittee on Energy
and Power, House Energy and Commerce Committee

OFFICE OF THE DEPUTY SECRETARY 004

**Announcement of Agreement Between
The United States Advanced Battery Consortium
and the U. S. Department of Energy
Thursday, October 17th, 1991**

Briefing Paper

The United States Advanced Battery Consortium (USABC) is comprised of the Big Three domestic auto makers, with support from utilities and battery manufacturers. The USABC and the Department of Energy's (DOE) Office of Conservation and Renewable Energy have agreed to jointly fund a 4-year, \$260 million research project to develop a new generation of batteries that would make electric vehicles cost and performance competitive by the year 2000.

This agreement represents the first time that the Big Three auto makers have worked jointly with the government on a research project. This agreement has been made possible through the combined efforts of DOE, the Department of Commerce and the USABC.

The objective of this consortium is battery development. In the President's remarks, the remarks of the auto company CEOs, and the photo opportunity around the battery display, the point must be made that before we can have electric vehicles widely available and competitively priced, we must reduce the cost and improve the performance of the batteries that will fuel them.

Specifically, the Battery Consortium will seek to:

- o Establish capability for the U.S. advanced battery manufacturing industry.
- o Accelerate market potential of electric vehicles by jointly researching the most promising advanced battery alternatives.
- o Develop "electric systems" capable of providing electric vehicles with range and performance competitive with conventional petroleum-based systems.
- o Collaborate on high-risk, high-cost advanced battery research and development for electric vehicles.

The purpose of the event is to announce the signing of this agreement. The purpose of the event is to highlight the following themes:

This is a major initiative, consistent with the National Energy Strategy, to reduce petroleum use in transportation and improve environmental quality;

This cooperative effort between the public and private sector, the first of its kind between government and the auto industry, can help to meet a significant international challenge and gain an edge against intense international competition;

This combines the best of the best: Detroit's manufacturing and marketing expertise with DOE's scientific and technical capabilities resident in the national laboratories.

This is a model for future public/private sector cooperation aimed at resolving issues affecting energy resources, the environment, and international competitiveness.

This is a major domestic economic initiative, as well as an energy and environment initiative, as it will help the domestic auto industry take the world lead in electric vehicles. This is very important for our economy--jobs--as well as energy and environmental policy.

The event will occur at the Thomas Edison Laboratory at Greenfield Village, an outdoor museum complex in Dearborn, Michigan. An outdoor setting will help emphasize the project's contribution to the environment. Greenfield Village is 15 minutes from Detroit Metropolitan Airport, 20 minutes from downtown Detroit, and has indoor facilities available in case of rain.

A visual display of leading battery technologies and hand-out information will be made available to assist the media in interpreting the technological importance of this work. The latest GM, Ford, and Chrysler electric vehicle concept cars will be on display.

10-07-91 12:10 OFFICE OF THE DEPUTY SECRETARY 006

**Announcement of Agreement Between
The United States Advanced Battery Consortium
and the U. S. Department of Energy
Thursday, October 17th, 1991**

Talking Points, President Bush

- * The announcement of this agreement today marks an important milestone as we seek efficient, effective solutions to the transportation, energy, and environmental challenges that face our Nation.
- * It is widely recognized that the major hurdle to successful commercialization of electric vehicles is the battery. This is a hurdle that has stood unclear for over 50 years.
- * This unprecedented challenge has brought forth an unprecedented agreement between government and industry: A four-year, \$260 million research and development program to develop transportation batteries before the end of this decade.
- * The program will focus on extending electric vehicles' driving range on a single charge from approximately 100 miles under current technology to over 200 miles, increasing battery specific energy and specific power, and improving electric propulsion technology.
- * The electric vehicles you are seeing and hearing more about have something in common that is more important than the source of their power: Each is a prototype -- a vision of transportation for the future. The key to turning these prototypes into effective, affordable, production automobiles is what we see in front of us today -- batteries.
- * The challenge before us is to take the knowledge gained from developing these prototypes, combine it with improved battery and develop an effective, commercially successful electric vehicle.
- * We are in a race -- a competition with our international partners. The team you see here is the U.S. race team. It's a lot of horsepower in this group. And we intend to put that muscle together with a strategic plan to win this race.

- * Beating our competitors to the next milestone in automotive technology means new jobs and new markets for American workers and American products. We will reassert our lead in this crucial industry.
- * The agreement we are announcing today combines the best that both parties have to offer -- the scientific and technical research capabilities of our national laboratories, and the manufacturing and marketing experience of America's car companies. It focuses these strengths on a specific and important challenge -- developing an automotive battery that will make electric vehicles commercially competitive by the year 2000.
- * It is fitting that we make this announcement in the shadow of Thomas Edison's Laboratory, relocated here from Menlo Park, New Jersey, and preserved. Edison is known by many for his inventions -- the electric light and the phonograph, to name just two. But Edison's real genius lay in his ability to organize men, materials, and financing in the practical pursuit of ideas.
- * His systematic approach to research and development is the one we have taken with this agreement. We have the fruits of Edison's achievements to inspire us.
- * The National Energy Strategy announced earlier this year charted course for transportation research and development for the 21st Century. It called for expanded federal efforts to develop advanced transportation technology, to diversify transportation fuels, and to increase industry participation in research and development.
- * This project today meets the objectives of our Strategy on a scale. It is also an important example of the progress that is possible when energy and environmental problems are considered a whole.
- * (Witness signing ceremony.)

DOE - Ford - GM - Chrysler Batteries Consortium
10/17/91 (Thurs.) Dearborn, MI

Contacts:

Kathy Jeavons x7845

Mark Gabor, DOE 586-5500

October 8, 1991

MEMORANDUM FOR MARY KATE GRANT

FROM: CAROL AARHUS 
SUBJECT: D.O.E. BATTERY EVENT

I hope the President is **charged up** for this one. Ha! I just spoke with Kathy Jeavons, and her feeling is that we should stress two things:

- 1) This consortium is yet another example of government and private industry working together on innovative technologies (R&D) to gain a competitive edge on other foreign countries. This consortium also gets the big 3 car companies (Ford, GM, Chrysler) to work together toward the same goal -- increasing American competitiveness in the world's automotive market.
- 2) It is also important that we stress the National Energy Strategy, emphasizing the need for research that will develop technologies that will reduce our dependence on traditional energy methods (foreign oil, presumably), and look for more cost-effective and environmentally-sound methods of energy -- methods that will carry us into the future.

Enclosed is a fax from DOE with some background on the event. Jim Fitzhenry in Cabinet Affairs is also working on some background stuff for us. Kathy is meeting with Demarest tomorrow morning about this, so I'll get more from her then. Let me know what else you need.

- * The agreement we are announcing today combines the best that both parties have to offer -- the scientific and technical research capabilities of our national laboratories, and the manufacturing and marketing experience of America's car companies. It focuses these strengths on a specific and important challenge -- developing an automotive battery that will make electric vehicles commercially competitive by the year 2000.
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- * (Witness signing ceremony.)



91 OCT 8

456

OFFICE OF THE SECRETARYFACSIMILE TRANSMITTAL SHEETDATE 10/8/91TO CAROL AARHUSFAX NUMBER 456-6218OFFICE NUMBER 456-2930COMMENTS CAROL - THIS IS DOE'S FIRST DRAFT OF A PROPOSED EVENT.THE INTENT WAS TO GET THE BALL ROLLING; THIS HAS NIDRA'S FINALCLEARANCE, I.E. ITS SUBJECT TO REVISION.FROM MARK GABORFAX NUMBER 586-0148OFFICE NUMBER 586-5500NUMBER OF PAGES INCLUDING COVER 7

**Announcement of Agreement Between
The United States Advanced Battery Consortium
and the U. S. Department of Energy
Greenfield Village
Dearborn, Michigan
Thursday, October 17th, 1991**

Schedule of Events

9:45 a.m. All participants, including press, TV and radio in place. Automobile battery display set near podium. Electric vehicles off to one side, out of immediate camera range. (Invitees attached.)

9:50 a.m. Cabinet officials and CEOs of GM, Ford and Chrysler arrive.

10:00 a.m. President Bush arrives.

10:04 a.m. Ken Baker, Chairman of Battery Consortium, welcomes participants, introduces Harold Poling, Ford CEO.

10:06 a.m. Harold Poling makes brief remarks.

10:08 a.m. Lee Iacocca, Chrysler CEO, makes brief remarks.

10:10 a.m. Bob Stempel, GM CEO, makes brief remarks. Introduces President Bush.

10:12 a.m. President Bush makes brief remarks. (Talking points attached). Announces agreement between DOE and the Battery Consortium.

10:20 a.m. President Bush witnesses signing ceremony by Secretary of Energy Watkins and 3 auto company CEOs.

10:23 a.m. Group photo opportunity inspecting batteries.

10:30 a.m. President Bush departs.

10:35 a.m. CEOs and Cabinet officials have brief Q/A with media.

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Admiral James Watkins, Secretary of Energy
Samuel Skinner, Secretary of Transportation
Robert Mosbacher, Secretary of Commerce
William Reilly, Administrator of EPA
John Engler, Governor of Michigan
W. Henson Moore, Deputy Secretary of Energy
J. Michael Davis, Assistant Secretary, Conservation and Renewable
Energy

Industry Participants

Robert Stempel, General Motors
John Bryson, Southern California Edison
Lee Iacocca, Chrysler Corporation
Harold Poling, Ford Motor Company
Richard Balzhiser, Electric Power Research Institute

Consortium Representatives

Kenneth Baker, Chairman USABC, General Motors
Frank Jamerson, Secretary USABC, General Motors
Robert Dietch, Southern California Edison
Arnold Fickett, Electric Power Research Institute
Robert Davis, Financial Officer USABC, Chrysler Corporation
John Wallace, External Affairs USABC, Ford Motor Company

Congressional Participants

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Committee
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Natural Resources Committee
Cong. John Dingell, Chairman, House Energy and Commerce Committee
(Cong. Dingell represents Dearborn, Michigan, District 16.)
Cong. Norm Lent, Ranking Minority Member, House Energy and Commerce
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**OFFICE OF THE SECRETARY**FACSIMILE TRANSMITTAL SHEETDATE 10/17/91TO JENIFER GROSSMANFAX NUMBER 456-6218OFFICE NUMBER 456-7752

COMMENTS _____

FROM MARK GABORFAX NUMBER 586-0149OFFICE NUMBER 586-5570NUMBER OF PAGES INCLUDING COVER 5

United States Advanced Battery Consortium

Briefing Paper

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- * This project today meets the objectives of our Strategy on a grand scale. It is also an important example of the progress that is possible when energy and environmental problems are considered as a whole. I urge Congress to play its part as well, by passing S. 1220 in the Senate and continuing to make progress in the House on comprehensive energy legislation.
- * (Witness signing ceremony.)

Washington, D.C. LULAC State Office

P.O. Box 44646

Washington, D.C. 20026

ATTN: SHIREE SANCHEZ

WHITE HOUSE

FROM: CESAR COLLANTES

HOST COMMITTEE

Sal Orochena

Dr. José Luis Cortez

Brent Wilkes

Margarita Collantes

David Benton

Frances Guerra

Tony Torres

César Collantes

Fidel Rul

David Ruiz

Eduardo Peña, Jr.

Jess Quintero

Irma Robison

Homero Guerra

Osvaldo Espada

Dr. Maria Sotomayor

Panchita Bello

José Vélez

Rose Marie Lucero

WASHINGTON, D.C. LULAC
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David Benton, Deputy State Director

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Francisco Apodaca, Treasurer

Emilia R. Rul, Secretary

Sal Orochena, Parliamentarian

ALL DAY FRIDAY I can
be reached at Washington Playa
Hotel (202) 842-1300 ext. 720
or leave message
→ side of Board Mtg.

LULAC and the
LAW FIRM OF BICKEL & BREWER
cordially invite
you to attend

NATIONAL HISPANIC AGENDA RECEPTION

Keynote speaker

The Honorable Esteban Torres
U.S. House of Representatives

Guest speaker

The Honorable José Vélez
LULAC National President

Friday, October 18, 1991

IBM Bldg. Penthouse Suite (East Tower)

1301 K Street, N.W.

Washington, D.C.

Donation \$10.00

6:30 p.m.

Note: there is another LULAC
reception tonight (Thurs 10/17/91)
at 6:00 - 8pm Senate Dirksen
Office Bldg. #106

P.S.

Joe says SUNDAY
Breakfast or Lunch mtg.
would be best.

Business Attire

Nation's Automotive Industry

- A leading customer of other major US industries (over \$30 billion annually for metals, plastics, glass, and assembled products).

\$10.1 billion of automotive stampings

\$5.4 billion of primary metals

\$2.5 billion of tires

\$2.4 billion of refrigeration and air conditioning equipment

\$1.9 billion of textile and textile products

\$1.7 billion of radios and speakers

\$1.6 billion of glass

\$1.2 billion of paints and allied products

\$1.2 billion of seats

\$1.0 billion of plastic resins and products

- Investor of over \$22 billion in new plants and equipment over the last two years.
- 300 motor vehicle assembly and parts manufacturing facilities in 200 cities in 35 states.
- Directly employs 800,000 people in the US, with 1990 payroll exceeding \$25 billion.
- Marketing through 24,000 franchised dealers, with almost 1 million employees, and payrolls of \$22 billion.
- Including related industries, and auto servicing and commercial use, motor vehicle related employment supports 12.5 million people -- one in every seven jobs in the nation's economy.

CONSUMPTION IMPACT

The Nation's automotive industry is a leading consumer of the output of other major U.S. industries. For example, it purchases:

- * 77 percent of the natural rubber
- * 67 percent of the lead
- * 63 percent of the malleable iron
- * 50 percent of the synthetic rubber
- * 39 percent of the platinum
- * 23 percent of the zinc
- * 18 percent of the aluminum
- * 12 percent of the U.S. steel production
- * 10 percent of the cooper

Announcement of Agreement Between
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Greenfield Village
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J. Miller
10/2/91
11:00 PM

Schedule of Events

- 9:45 a.m. All participants, including press, TV and radio in place. Automobile battery display (possibly mounted on a chassis or skeletal frame work of a concept vehicle) set near podium under a banner bearing the slogan "Partnership for the 21st Century." Electric vehicles off to one side, out of immediate camera range. (Invitees attached.)
- 9:50 a.m. Cabinet officials and CEOs of GM, Ford and Chrysler arrive.
- 10:00 a.m. President Bush arrives.
- 10:04 a.m. Don Runkle, Vice President of General Motors Corporation, welcomes participants and makes brief remarks. Introduces Admiral Watkins.
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Robert Mosbacher, Secretary of Commerce
William Reilly, Administrator of EPA
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J. Michael Davis, Assistant Secretary, Conservation and Renewable
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John Bryson, Southern California Edison
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Cong. Norm Lent, Ranking Minority Member, House Energy and Commerce
Committee
Cong. Philip Sharp, Chairman, Subcommittee on Energy and Power,
House Energy and Commerce Committee
Cong. Carlos Moorhead, Ranking Minority Member, Subcommittee on Energy
and Power, House Energy and Commerce Committee

United States Advanced Battery Consortium

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- * (Witness signing ceremony.)

United States Advanced Battery Consortium

Talking Points Admiral Watkins

- * During the last decade, both DOE and industry funded a variety of research options for electric vehicles.
- * In assessing this effort, it was difficult to gauge the progress that was being made. It was difficult to determine what we were achieving and where we should go with this effort.
- * We, DOE, went forward to Detroit and put a challenge to them. If industry can get together and decide on a research course that they would like to pursue, we would help.
- * Don Runkle, GM Vice President, picked up that challenge. The group responded quickly. Don, we wouldn't be here today without your foresight and effort.
- * And our thanks to the management team of the Battery Consortium, the group piloting this project through uncharted waters.
- * We also wouldn't be here today without the help and effort of Bob Stempel, Harold Poling and Lee Iacocca. They committed their companies to participating in this program -- to addressing an issue of enormous importance for both energy and the environment.
- * We had excellent support by DOE's Chicago Field Office and headquarters. The procurement and legal staffs worked hard and well. The Department of Commerce provided its sanction for this unique effort.
- * This event epitomizes the new course being steered by the Department of Energy -- a course for better government-industry cooperation.
- * The course we have charted is not just one where public and private sectors pool their resources to achieve the best results. It is a course where industry decides what the research priorities are, and government's role is to facilitate the process by which technological progress is made.
- * Industry picks the technologies they believe have the most merit, not government. Industry makes their choices in a process that government helps structure and in which it participates.

- * This approach holds great promise for success and we want to do more of it.
- * This event today says we can choose a better way to do business, a way that chooses cooperation over conflict, technological innovation over regulation.
- * Regulating increased fuel economy will not significantly reduce our dependence on insecure sources of foreign oil; to accomplish that, we need alternatives to gasoline - and the electric vehicle is one of the most attractive alternatives around.
- * To get the result we all desire is not a regulatory issue; it is a technological one, and that is why we are here today.
- * This is why our National Energy Strategy places a strong emphasis on expanding research and development of energy technologies. The Department's budget request for FY 1992 seeks \$900 million for funding the R & D initiatives associated with the Strategy. This is a 34 percent increase over current year funding. Over the next 5 years, the Department anticipates spending \$3.5 billion for NES-related research and development.

Date: 10-17-91

Time: ____:____

THE WHITE HOUSE
Office of Policy Development

FAX COVER SHEET

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THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release

February 20, 1991

FACT SHEET:

THE NATIONAL ENERGY STRATEGY

President Bush today proposed a comprehensive and balanced strategy for an energy future that is secure, efficient, and environmentally sound. The National Energy Strategy is designed to diversify U.S. sources of energy supplies and offer more efficiency and flexibility in the way energy is consumed.

The National Energy Strategy is the product of twenty months of public recommendations and Administration consideration. In developing this strategy, the Department of Energy conducted eighteen public hearings and received thousands of written comments.

With the benefit of this input, the Administration analyzed the full array of energy options and has developed a strategy that will support continued economic growth, increase energy efficiency, protect the environment, and reduce America's vulnerability to energy supply disruptions.

The Strategy is consistent with the Administration's policy of reliance on market forces. Over the next two decades, the Strategy will make the U.S. more energy efficient and enhance our competitiveness without resorting to heavy-handed regulations, taxes, or import fees that can hurt consumers and cost Americans jobs.

The Strategy acknowledges that the U.S. is part of an energy interdependent world. It is not in our interest to adopt measures that may reduce imports, but inflict severe economic or environmental damage. Therefore, the National Energy Strategy balances economic, environmental and energy security objectives.

Over the next twenty years, this balanced approach to production and conservation will power a larger U.S. economy while using less energy. At the same time, the U.S. will produce more of the energy it uses. The National Energy Strategy by the year 2010 will:

- o reduce domestic oil demand by 3.4 million barrels per day, below projected levels.
- o increase domestic oil production by 3.8 million barrels per day above projected levels.
- o increase the electricity produced from renewable sources, such as solar, hydropower, and geothermal by 16 percent.
- o raise the use of alternative transportation fuels, such as compressed natural gas, ethanol and methanol, thereby reducing the need for approximately 2.0 million barrels of oil per day.
- o reduce growth in electricity demand by over 10 percent, by unlocking market forces through elimination of costly regulation, thereby saving consumers approximately \$27 billion in electricity costs in the year 2010.

* [The Strategy will also benefit the environment. Proposals to increase the use of clean coal technology, natural gas, and nuclear energy to generate electricity, as well as the development of new energy efficient technologies will:] *

- o hold U.S. emissions of greenhouse gases by the year 2000 at or below 1990 levels.
- o improve air quality by reducing emissions of pollutants that contribute to acid rain and smog.
- o mitigate solid waste problems by reducing coal ash waste 25 million tons per year, and by lowering coal cleaning wastes by 50 million tons per year.

The Strategy incorporates and complements a number of Bush Administration initiatives. These include (1) the 1990 revisions to the Clean Air Act; (2) natural gas well-head decontrol legislation; (3) incentives provided to domestic renewable and fossil energy producers in fiscal year 1991 budget agreement; (4) the energy research and development initiatives announced in the President's FY 92 budget; (5) the Administration's domestic energy supply and demand measures adopted in response to the Iraqi oil disruption; and (6) the Administration's science and mathematics education initiatives.

To meet the challenges ahead, the National Energy Strategy calls on Federal, State, and local governments to work together to encourage energy conservation and new energy production through reduced regulation and streamlined licensing procedures, particularly in the natural gas, oil and gas pipeline and hydropower areas. At the Federal level, the Administration

intends to lead by improving the energy efficiency of federal buildings, federal housing and accelerating the purchase of alternative fuel vehicles for the federal fleet.

INCREASING ENERGY AND ECONOMIC EFFICIENCY

Transportation Efficiency

Highlights

The National Energy Strategy will increase transportation efficiency by:

- o requiring centrally-fueled fleets to purchase vehicles capable of using alternative fuels, such as compressed natural gas, ethanol and methanol.
- o increasing Federal purchases of alternative fuel vehicles.
- o increasing the Corporate Average Fuel Economy credit that automakers currently receive for producing alternative fuel vehicles.
- o promoting State and local government and private-sector programs that offer a "bounty" for scrapping older, high pollution, gas guzzling cars.
- o increasing use of public transit, vanpooling and ridesharing by raising the limit on tax-free commuter subsidies that employers can give employees.
- o proposing to invest a Federal share of up to \$150 million from FY 92 to FY 96 in a new research program with the automobile industry to accelerate the development of electric vehicles.
- o accelerating R&D in new energy efficient technologies, including high performance aircraft engines, vehicle propulsion systems, MAGLEV and high-speed rail and by widely implementing Intelligent Vehicle/Highway systems.

R&D

These measures are projected to save the equivalent of 3.0 million barrels of oil per day by 2010 without the harmful effects of higher taxes, oil import fees, or unjustifiable CAFE levels. The Administration has commissioned an independent study by the National Academy of Sciences on feasible fuel economy levels. The number of passenger miles driven is estimated to increase by 60 percent by 2010; however, under the Strategy the volume of gasoline purchased by consumers is projected to fall by 13 percent.

Electricity Generation and Efficiency

Highlights

The National Energy Strategy will raise electricity efficiency by removing barriers to greater competition that currently raise the cost of electricity and by encouraging energy efficient investments by utilities and consumers:

- o amending the Public Utility Holding Company Act (PUHCA) to allow power suppliers to build, own and operate power facilities in more than one area.
- o supporting state and utility efforts to invest in energy efficiency as an alternative to power plant additions (Integrated Resource Planning).
- o reforming the Public Utility Regulatory Policies Act (PURPA) to modify size and fuel use restrictions for small power producers.
- o providing tax-free treatment of utility discounts on consumers' electricity bills for efficiency investments.
- o expanding access to electricity transmission for utility and non-utility wholesale buyers and sellers.
- o reducing Federal subsidies for the debt of Federal Power Marketing Administrations.

These measures are projected to reduce electricity demand growth by over 10 percent in 2010 and save consumers \$27 billion in electricity costs in the year 2010.

Residential and Commercial Building Efficiency

Highlights

The National Energy Strategy will raise efficiency levels for residential and commercial buildings by:

- o accelerating R&D for building technologies by increasing Federal funding to \$55 million in FY 92, a 22 percent increase.
- o encouraging providers of home mortgages to share energy efficiency ratings with prospective home buyers.
- o setting cost-effective energy efficiency standards for appliances and equipment as provided under current law.
- o expanding energy efficiency labeling programs to include

certain other equipment including light bulbs.

- o develop and encourage the use of cost-effective building efficiency standards.

These measures will reduce building energy demand. The amount of floor space in malls, office buildings, and other commercial building is projected to grow by 57 percent, but the energy needed to heat, cool, and light that space will grow by less than half that amount. In the year 2010, the U.S. is forecast to have 24 percent more occupied housing than today, but will use only 10 percent more energy to service that housing.

Industrial Energy Efficiency

Highlights

The National Energy Strategy will raise industrial energy efficiency by:

- o increasing research and development for industrial waste reduction and recycling.
- o encouraging the use of industrial energy audits at the state and local level.
- o modifying existing regulation where needed to ensure that the use of waste minimization technologies is not discouraged.

By the year 2010, industrial output is projected to grow 80 percent; yet if the Strategy is implemented, the United States is projected to use only 27 percent more energy to power our factories, plants, mills, and similar facilities. In addition, the negative environmental impacts of industry will decline.

SECURING FUTURE ENERGY SUPPLIES

Securing Petroleum Supplies

Highlights

The National Energy Strategy will reduce our vulnerability to oil supply disruptions by:

- o encouraging oil production in other countries outside the Persian Gulf.
- o expanding worldwide strategic petroleum stocks available to offset future oil supply disruptions, including our

Strategic Petroleum Reserve.

- o expanding joint Federal/private investment in advanced oil recovery technology by increasing Federal funding in FY 92 by 24 percent to \$52 million.
- o providing environmentally responsible access to areas of the coastal plain of ANWR and resolving technical and regulatory barriers to greater Alaska North Slope oil development.
- o allowing environmentally responsible access to Outer Continental Shelf areas, consistent with the President's decision last year.
- o deregulating oil pipelines in competitive markets.
- o increasing production of California heavy oil and allowing access to export markets.
- o evaluating the refining sector's ability to meet future demand for a variety of liquid fuels.

These measures will increase domestic oil production by up to 3.8 million barrels per day in 2010, and raise economically recoverable resources by 25 to 70 billion barrels.

Securing Natural Gas Supplies

Highlights

The National Energy Strategy will promote domestic and international natural gas production by:

- o streamlining gas pipeline construction reviews and developing more efficient environmental review procedures.
- o deregulating pipeline sales rates in competitive markets and reforming gas pipeline rate designs.
- o supporting environmentally responsible exploration and development in certain offshore areas, consistent with the President's OCS decision last year.
- o improving third party access to gas pipeline transportation services.
- o eliminating certain import/export regulations on natural gas.
- o expanding use of natural gas in alternative fuel vehicles.

These measures are projected to save up to 600,000 barrels of oil

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per day by 1995, and increase natural gas consumption by almost 1 trillion cubic feet in 2000. Residential consumers are projected to save \$200 million in 2000 and \$850 million in 2010 in reduced costs.

Securing Future Coal Supplies

Highlights

The National Energy Strategy will promote the use and export of clean coal resources by:

- o accelerating use of clean coal technology through Federal and State regulatory incentives.
- o clarifying the applicability of the Clean Air Act to refurbished power plants.
- o creating favorable export markets for U.S. coal and coal-burning technologies.
- o removing barriers to constructing coal slurry pipelines.
- o pursuing research and development on environmental protection during mining.

These measures will allow the U.S. coal industry to capture a major share of the growing international coal and coal technology markets, while improving our ability to more cleanly and efficiently utilize the large U.S. supplies of low cost coal.

Securing Nuclear Power

Highlights

The National Energy Strategy will promote the ability of nuclear power to meet electricity needs by:

- o reforming and streamlining the nuclear plant licensing process, as well as the process for siting and licensing of waste facilities.
- o developing standardized designs for "next generation" power plants, so that the licensing process is not delayed and financial risks are reduced.
- o accelerating research and development of "next generation," passively safe design nuclear reactors.

These measures will enhance the ability of nuclear technology to meet electricity needs by reducing costs and increasing safety and reliability. Nuclear power production could increase by 10

percent over levels otherwise projected for the year 2010.

Securing Renewable Resources

Highlights

The National Energy Strategy will promote the development and use of renewable resources by:

- o extending the current investment tax credit for renewable energy technologies through 1992.
- o streamlining hydropower licensing processes at existing dams and eliminating unwarranted Federal regulation of small hydropower projects.
- o amending PURPA to encourage renewable power production by small power producers.
- o supporting conversion of municipal solid waste to energy as part of a comprehensive waste management strategy.
- o developing cost-competitive liquid fuels from non-food crops with new research and development support.

These measures will increase electricity generation from renewables by 16 percent in 2010. In addition, they would reverse the losses of hydropower generation capacity and increase fuel and technology choices for transportation.

Securing Fusion Technology

The National Energy Strategy will intensify international collaboration in fusion research and focus investments in magnetic and inertial confinement reactor concepts.

Through these efforts a demonstration plant could be developed by 2025 and an operating commercial plant could cost-effectively supply power by 2040.

Enhancing Research and Development for Energy Security

The National Energy Strategy includes a major commitment to advanced energy technology. The FY 92 budget includes \$903 million, or 34 percent above 1991 levels, for increased investments in support of National Energy Strategy research and development initiatives.

To ensure that research and development efforts pursue useful goals and result in ultimate commercialization of technologies, these initiatives will utilize industry cost-sharing and will be carried out as joint government-industry programs. In addition,

a national awards program will be created, offering prizes for energy-related innovations that meet specific technological challenges.

Major research initiatives include: advanced transportation fuels from biomass, vehicle propulsion technologies, electric vehicle technology, aeronautical technologies, high speed rail and magnetic levitation, intelligent vehicle/highway systems, telecommuting, air traffic control, advanced oil recovery technologies, industrial technologies, and advanced light water nuclear reactors concepts.

By 2030 these research and development initiatives could save between 5 million and 8 million barrels per day of oil equivalent.

ENERGY AND THE QUALITY OF AIR, LAND AND WATER

Highlights

The National Energy Strategy will enhance environmental quality by:

- o increasing the use of natural gas, renewable energy sources, and alternative fuels.
- o improving energy impact assessments in federal regulatory proceedings.
- o developing model programs for energy facilities siting.
- o minimizing waste from energy production, transformation, and use.

These measures, in conjunction with the Clean Air Act Amendments, are projected to reduce sulphur dioxide emissions by 40 percent, nitrogen oxides by 30 percent, and volatile organic compounds emissions by 25 percent from projected levels by 2030. In addition, they will improve the economics and efficiency of environmental compliance, which currently costs over \$100 billion per year and is rising.

ENERGY AND THE GLOBAL ENVIRONMENT

The National Energy Strategy and previous Bush administration actions, coupled with ongoing Federal research aimed at reducing scientific uncertainty on the potential for global climate change, will reduce greenhouse gas emissions and demonstrate U.S. international leadership on this issue.

In 2000, U.S. greenhouse gas emissions are projected to be at or below their 1990 levels, despite steady increases in U.S.

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economic growth.

FORTIFYING FOUNDATIONS: Science and Engineering Research, Technology Transfer, Science and Math Education

The National Energy Strategy will continue the administration's commitment to science and engineering research, technology transfer, and science and math education by:

- o increasing the Federal investment in the nation's basic science research portfolio to over \$12 billion in FY 92.
- o re-aligning Federal research and development priorities to better serve National Energy Strategy goals.
- o ensuring the viability of world class U.S. facilities and pursuing international agreements to support high-cost facilities.
- o increasing industry participation in research and development and commercialization.
- o protecting intellectual property rights.
- o promoting technology exports.
- o promoting the Administration's commitment to math/science education through, for example, strengthened curriculum; Federal technical assistance and training for teachers; and broadened public science literacy programs.

LEGISLATIVE PACKAGE

A legislative package to implement National Energy Strategy measures that require statutory change will be transmitted to Congress shortly. As an addition to that legislative package, the Administration will propose bringing the Federal Energy Regulatory Commission (FERC) into the Department of Energy.