

		<b>State of the Movement and Strategy Development On Plug-In Hybrid Vehicles February 23, 2007</b>			
<b>Priorities</b>				<b>Other Priorities Receiving Votes</b>	
<b>A</b>	<b>Coordination Efforts</b>		<b>Score</b>		<b>Score</b>
	1	National Conference	12	PHEV News Service	3
	2	Coordinate Legislation Agenda	11	Website	5
	3	Gov. multi-agency Coordination	10	Email List-Serve	5
	4	Coordinate Council	8	Complimentary/expanded Universe	7
	5	Master Matrix	8		
<b>B</b>	<b>Government Policies</b>				
	1	consumer tax credits	19	Carpool Lanes Replacements	5
	2	increase CAFE standards	13	Optimized ZEV Mandate	3
	3	carbon caps	12	IMM PHEV Bill	1
	4	mandated govt. fleet orders	12	Simple Certification Process	4
	5	mandated smart grid infrastructures	10	Vehicle Emissions Standards	9
				Increase Gas Tax	9
<b>C</b>	<b>Research</b>				
	1	smart grid	17	Opposition Research	6
	2	battery tech	16	Battery Economics	3
	3	emissions standards/protocols	16	Power electronics	4
	4	market research	13	US Technology Dev. Focus	6
	5	optimal design/research	13	Power Management	3
<b>D</b>	<b>Fleets</b>				
				School Bus Link	3
	1	Fleet specs and guidelines	15	Advanced Diesel/PHEV's	4
	2	Business case deployment	14	Revitalized 21st Century Truck Program	
	3	Differential Cost Mechanism	13	Environmental Justice Link	4
	4	Scalability analysis	7	Senior Citizen Link	3
<b>E</b>	<b>Rebates and Incentives</b>				
	1	Utilities rebates	17		
	2	tradeable credits	13		
	3	Warranty/Ownership Battery	12	Recharge Stations	7
	4	Advantageous rate structure	10		
	5	corporate employee incentives	9		
<b>F</b>	<b>Technical Demos</b>				
	1	attention-getting mass market			
	2	demos for cities			
	3	smart grid integration			
	4	renewables demo 1) liquid; 2) wind			
<b>G</b>	<b>Education/ Events</b>				
	1	campaign tool kit	18	Celebrity Endorsements	5
	2	accurate web-based education	17	Shareholder OEM Events	2
	3	communications plan	16	Nomenclature	4
	4	meta campaign	13	Viral Media	4
	5	value definition (for OEMs)	11	School Curriculum, K-12	5

## A Coordination Efforts

	Next Steps	Primary Responsible Entity*
<p><b>1 National Conference</b> - An overall symposium on the state of PHEVs in all areas of concern including research, demonstrations, legislation and education</p>	<p>This would happen in the fall of 2008 after at least one round of coordinating council meetings and the primary sponsor would be PIP</p>	<p>PIP</p>
<p><b>2 Coordinate Legislative Agenda</b> - This would be an effective information exchange effort and an effort to assist in federal , state and local legislation development</p>	<p>A first effort would be to research all proposed/pending legislation applicable to PHEV's and list links on proposed website</p>	<p>Dutko Worldwide, Steve Marshall</p>
<p><b>3 Gov. Multi-Agency Coordination</b> - Several federal agencies have important jurisdiction over administrative and standards development regarding PHEVs. This is an effort to work with those agencies to establish effective PHEV policies</p>	<p>Through meetings with the OEMs and Federal Agencies issues such as:            - standardized infrastructure            - Monroney Label revision            - test cycle measurement            will be examined together</p>	<p>EPRI</p>
<p><b>4 Coordinating Council</b> - This is an effort to update ourselves on a regular basis about progress on all the strategies and action items listed in this document. This group could expand to include OEMs, QVMs, and others as needed.</p>	<p>Meetings 3 times a year alternating between: west coast; midwest; and, east coast. Next meeting in Austin in the June time frame.</p>	<p>PIP, Dutko Worldwide</p>
<p><b>5 Master Matrix</b> - This would be a web based file of all the issues, actions and time frames for all the items in this document</p>	<p>First draft of this matrix is this document. It will be transcribed to the web and made available to the movement.</p>	<p>Google</p>

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## B Government Policies

		<b>Next Steps</b>	<b>Primary Responsible Entity* **</b>
<b>1</b>	<b>Consumer Tax Credits</b> - To boost economic competitiveness of PHEVs it is important to work toward federal legislation that provides tax credits. The current Congress is considering this provision in several bills.	Survey members of the movement to learn about their efforts in Congress that include tax credit language applicable to PHEV's, determine what needs to be done to improve the language and develop/implement a strategy for adoption	PIP, Dutko Worldwide, Set America Free
<b>2</b>	<b>Increase CAFE Standards</b> - As part of a general effort to reduce auto emissions and improve efficiency of all automobiles, legislation stiffening the standards is needed.	Key members of the movement are working with members of Congress in the current session to attempt to include an effective provision	NRDC
<b>3</b>	<b>Carbon Caps</b> - As part of a nationwide program to reduce atmospheric CO2 emissions from automobiles to help avoid the risk of exceeding the threshold where global warming is catastrophic	PHEVs are a large increment in the equation of the reduction of transportation related CO2 emissions therefore, a complete solution needs to include PHEVs	NRDC/EPRI
<b>4</b>	<b>Mandated Govt. Fleet Orders</b> - Federal fleets and quasi-governmental fleets like the Post Office can be very compatible with PHEV operating protocols and are a significant source of appropriate vehicles	Key members of the movement are working with members of Congress in the current session to attempt to include an effective provision	NRDC, Steve Marshall, EEI, Set America Free
<b>5</b>	<b>Mandated Smart Grid Infrastructures</b> - This is governmental regulations requiring the ability to provide grid to vehicle and vehicle to home capability where the utility will know who to charge a customer no matter where they re-charge their PHEV and use the stored battery energy to assist in running house and grid system needs at the appropriate time of day	This is in the early talking stages of consideration requiring leadership from the utility industry to create the protocols and prove up the technology	EPRI, GWA, APPA

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\*\* In this particular area other NGOs not listed may also have a significant role to play in reporting and in achieving the items

## C Research

### Next Steps

### Primary Responsible Entity\*

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|---|---|--|
| <p><b>1 Smart Grid</b> - This is the ability to provide grid to vehicle and vehicle to home capability where the utility will know who to charge a customer no matter where they re-charge their PHEV and use the stored battery energy to assist in running house and grid system needs at the appropriate time of day</p> | <p>This would require working with DOE Office of Electricity Delivery and Energy Reliability as well as the national labs, grid operators and others</p>  | <p>EPRI, GWA, APPA</p>   |
| <p><b>2 Battery Tech</b> - Batteries are expected to last the life of the vehicle and be reasonable in weight and cost. Li-Ion batteries have the most potential to meet these requirements but are not at the point where OEMs will provide their standard drive train equivalent warranty</p>                             | <p>The major battery development firms are now under contract with OEMs to produce batteries for PHEVs that will receive the OEM full warranty. We need to meet with the battery makers on a regular basis at our Coordinating Council meetings to stay abreast of their progress</p> | <p>PIP, EPRI</p>   |
| <p><b>3 Emissions Standards/Protocols</b> - This is the need to achieve consensus on test cycle measurements and other protocols to create the equal basis to compare PHEVs to HEVs and normal ICE vehicles</p>   | <p>There is a working sub-committee that NRDC is working on. Their efforts need to be reported to the Coordinating Council regularly.</p>   | <p>NRDC, Andy Frank</p>  |
| <p><b>4 Market Research</b> - This is a contract effort to determine the sense of marketplace and of consumers with PHEVs</p>   | <p>Every few years our understanding of the PHEV marketplace through a market study is needed. The Coordinating Council needs to work together to design the survey and seek funding</p>  | <p>PIP</p>   |
| <p><b>5 Optimal Design/Research</b> - This is a flex fuel PHEV that maximizes fuel reduction, maximizes environmental pollution reductions and that is the common ubiquitous american vehicle</p>   | <p>EPRI, The Hybrid Consortium, and WestStart-CALSTART are all engaged in this research currently and are working with OEMs to bring such a vehicle forward. Some mathematical modeling is needed to optimize the drive train characteristics</p>                                     | <p>EPRI, The Hybrid Consortium, and WestStart-CALSTART, Rocky Mountain Institute, Andy Frank</p> |

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## D Fleets

**1 Fleet Specs and Guidelines** - For each PHEV platform a suitable set of common specifications is needed. Recent efforts to establish this for school buses needs to be repeated for other common fleet vehicles.

This should be undertaken with a geographic cross section of the fleet managers for each platform working in committee.

### Primary Responsible Entity\*

OEMs & others such as Advanced Energy

**2 Business Case Deployment** - It is necessary to justify the additional initial expense of a PHEV that the customer and fleet manager both have a simple economic rationale that they can use and understand to assist in making purchase decisions

The case has been made by PIP and others as they have traveled around the country to discuss PHEVs and seek soft purchase orders. As the cost issues become better defined the OEMs will take on this task

OEMs

**3 Differential Cost Mechanism** - Fleet managers are confronted with fixed budgets and vehicle replacement requirements. They are usually not able to cover the premium cost for PHEVs and maintain the vehicle minimum at the same time.

The differential PHEV cost for fleets needs to be programmed through legislation, city budgets, or by some method that creates an appropriate fleet-by-fleet funding mechanism

Fleet Managers

**4 Scalability Analysis** - PHEV conversion firms are growing rapidly in number and size and the demand for conversions is mounting. The scale of the demand is currently exceeding the capability of the marketplace to meet the demand in a timely fashion

A session at the annual conference needs to focus on this issue

Business Incubators

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## E Rebates and Incentives

	Next Steps	Primary Responsible Entity*
<b>1 Utilities Rebates</b> - This would be a nationwide consortium of utilities working in unison to provide rebates for the purchase of PHEVs that would operate in parallel with a federal tax rebate program to reduce the initial purchase price to consumers	For one reason or another many utilities are prohibited from offering rebates. A first task is to catalog utilities legal abilities in this area.	ENRECA, APPA, EEI
<b>2 Tradeable Credits</b> - In a situation where utilities are required to reduce CO2, this would be a federally approved program that would allow utilities to get CO2 credit for its programs and then permit utilities to trade those credits with other utilities.	This is part of an overall CO2 policy within global warming legislation that could be considered by Congress	Dutko Worldwide, Steve Marshall
<b>3 Warranty/Ownership Battery</b> - This would be a nationwide program sponsored by OEMs where utilities would take on the ownership and the provision of battery warranty in PHEVs	OEMs and utility industry will need to pursue the practicality of such a program	OEMs, EPRI or Others
<b>4 Advantageous Rate Structure</b> - Rate structure organization is handled federally through FERC. Time of day rate structures that benefit PHEVs by reducing rates in the evening hours are available and many utilities already have those structures for their commercial customers	This is a utility by utility program with specific and unique policy implications by utility	Utilities
<b>5 Corporate Employee Incentives</b> - This is a corporate program where businesses provide incentives to their employees for purchasing PHEVs	A program description and promo to distribute nationally is needed as OEMs begin to bring PHEVs to market	PIP

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## F Technical Demos

**1 Attention-Getting Mass Market** - This is a flex fuel PHEV that maximizes fuel reduction, maximizes environmental pollution reductions and that is the common ubiquitous american vehicle (also C5)

**2 Demos for Cities** - Before OEMs go to production there will be a demonstration data gathering phase where a small number of vehicles are tested with a variety of possible designs. Cities and other public sector fleets can assist the OEMs in analyzing these demo PHEVs.

**3 Smart Grid Integration** - This is the ability to provide grid to vehicle and vehicle to home capability where the utility will know who to charge a customer no matter where they re-charge their PHEV and use the stored battery energy to assist in running house and grid system needs at the appropriate time of day (also B5 and C1)

**4 Renewables Demo 1) Liquid; 2) Wind** - This is a special set of demonstrations that make use of cellulosic ethanol and other liquid renewable fuels or wind and solar energy as transportation fuels for fuel flexible PHEVs

### Next Steps

EPRI, The Hybrid Consortium, and WestStart-CALSTART are all engaged in this research currently and are working with OEMs to bring such a vehicle forward. Some mathematical modeling is needed to optimize the drive train characteristics

PIP, EPRI and other umbrella organizations can provide geographic and agency variety to OEMs to help in getting appropriate data collected.

This is in the early talking stages of consideration requiring leadership from the utility industry to create the protocols and prove up the technology

Research proposals for these alternate transportation fuels are being developed

### Primary Responsible Entity\*

EPRI, The Hybrid Consortium, and WestStart-CALSTART, RMI

PIP, EPRI, Quantum

EPRI, APPA

EDI

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## G Education/Events

	<b>Next Steps</b>	<b>Primary Responsible Entity*</b>
<p><b>1 Campaign Tool Kit</b> - This refers to a body of material that would be developed to provide to groups who are interested in starting their own PHEV promotion program</p>	<p>A sub-committee of the Coordinating Council would be created at the next meeting to proceed with this</p>	<p>Rainforest Action Network, CalCars</p>
<p><b>2 Accurate Web-Based Education</b> - This would rely on the master matrix (A5) as a basis for education about PHEVs, the state of the science, and the results of marketplace efforts</p>	<p>A sub-committee of the Coordinating Council would be created at the next meeting to proceed with this</p>	<p>Google</p>
<p><b>3 Communications Plan</b> - This would be an activity of a sub-committee of the Coordinating Council (A4) to move forward with a professional mass market campaign utilizing PSAs, major paper editorials and similar tools</p>	<p>A sub-committee of the Coordinating Council would be created at the next meeting to proceed with this</p>	<p>RAN, Plug in America, CalCars</p>
<p><b>4 Meta Campaign</b> - This is to be a coordinated effort covering each of the priority areas in this document to carry out the goals of the movement to bring PHEVs to the marketplace</p>	<p>The next step here is to create a sub-committee to take this document to the next step by focusing on time horizons, coordination and responsible parties across each of the priority areas listed</p>	<p>Google, PIP</p>
<p><b>5 Value Definition (for OEMs)</b> - As part of a communications plan and business case deployment (D2) a one page level economic /environment "pocket book" justification for PHEVs would be developed and distributed</p>	<p>A first level draft of this important marketing tool would be developed for consideration by the Coordinating Council at their next meeting</p>	<p>PIP, OEMs</p>

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