

MULTI-YEAR RESEARCH, DEVELOPMENT AND DEMONSTRATION PLAN, TARGETS

1. What is your "vision" for the coming 3-5 years?

In February, DOE's Office of Hydrogen, Fuel Cell and Infrastructure Technology (OHFCIT) issued the [Multi-Year Research, Development and Demonstration Plan](#) (MYRDDP), which is a 5-year plan featured on our website. This plan includes the mission, goals objectives, and technical targets of the program. This plan supports the [Hydrogen Vision](#).

2. Cost targets for Topics 4A1 and 4A2 are too aggressive. \$8 to 10/kW is more reasonable. We know of no manufacturer who has produced bi-polar plates for \$10/kW (as reported is available in 2004). Do you have an example?

Those targets have been developed with the FreedomCAR Tech Team. The targets were developed to be cost competitive with current technology. They are aggressive. The status of all cost targets are projected to high volume manufacture, which for transportation applications is 500,000 fuel cell systems per year.

The MYRDDP was updated and issued in February. Anyone may submit comments about the multi-year plan. We encourage you to make comments and question the targets and we will continue to look at those and update them.

3. Are you or other DOE representatives willing to meet one-on-one to discuss solicitation topics? The 5-year plan? The goals?

We are willing to meet one-on-one with people to discuss the solicitation topic. We can also meet to discuss the program goals and/or content of the MYRDDP. On the subject of the topics of the solicitation, we can meet before the solicitation is issued, but once the solicitation is issued we cannot meet to discuss solicitation topics or potential proposals. At that time, questions regarding the solicitation can be submitted only according to the instructions in the solicitation.

4. How do you define and measure "success" of the OHFCIT?

Success would be defined by the achievement of the technical targets that are defined in the MYRDDP, therefore, providing sufficient information to enable an industry commercialization decision on hydrogen fuel cell vehicles by 2015.

SOLICITATION

5. Since I am submitting a proposal the first time this year, is there a previous proposal (sample) I can see via internet?

No. Proposals are proprietary and we are not allowed to release proposals to other people.

6. Is there a typical acceptable project size and are multi-year awards the norm?

Yes, multi-year awards are the norm. We are expecting roughly 3-year projects. We expect the typical project size to be between \$3-6 million over 3 years.

7. Is there a percent of the total proposed budget which new equipment and facilities requests should not exceed in order to be considered reasonable?

No, there is no specific percentage, however the less, the better. The funding has been requested to support R&D, not purchase new equipment or new facilities.

8. How should organizations that have capabilities to cover multiple topics (for example 1A, 3B, 4A) proceed in putting in proposals?

Currently, we have 7 major topic areas. You will need to submit separate proposals for each of the major topic areas. For subtopics, you can submit a single proposal covering the subtopic areas within one topic or submit separate proposals for the subtopic areas.

9. How many total awards are envisioned?

With \$70 million in expected funding (assuming this amount is appropriated by Congress), we expect to issue about 15 awards.

10. How many projects will be funded in each one of the topic areas?

To be determined. We may provide a target in the final solicitation.

11. Is there a ceiling amount of award?

No ceiling amount. The final solicitation will provide the expected amount of funds to be provided and number of awards.

12. Give us three months for the applications in order to make strong and functional teams: industry, labs, universities, and international.

We plan to provide about 90 days for you to respond.

13. Will a draft solicitation be issued before August?

No additional drafts of the solicitation topics will be issued. We are going to take your comments and use them to develop the final solicitation, which will be the next version issued around mid-August.

14. Can other government agencies submit proposals?

No, other governmental agencies cannot respond to the solicitation.

15. Can currently-underway projects be re-submitted for funding continuation past 2006 assuming they target the 2010 performance milestones?

Yes, if the new work being proposed is still relevant and falls within the topic areas, then proposals for continuation projects will be considered.

16. Any plans to deal with congressional re-directs?

Since the fuel cell budget is now under the Energy and Water Appropriations Committee, our appropriation may be subjected to congressionally directed activities. If we get congressionally directed activities within our budget, it would impact the amount of funding available for this solicitation.

17. There were several approved but unfunded projects in FY2005. Does this new call affect these awards in any way?

No. The unfunded 2005 awards were in the hydrogen production area and this solicitation is for the fuel cell area. The funding is separate for the two areas.

18. Does DOE intend to own IP resulting from this program?

In general, DOE does not usually own the intellectual property (IP). There is a process for waiving the "march in" rights the government has. In general, the company or lab that develops the technology has the rights to the IP.

19. Who contributed to the written comments?

The DOE presentation on written comments received to date (posted on the website at http://www.eere.energy.gov/hydrogenandfuelcells/pdfs/pre_sol_wrkshp_valri.pdf) provides only general information on the nature of these comments. We did not tell people that their comments would be publicly available so we are not at liberty to share who submitted what comments.

20. When will today's presentation slides be on the web?

Presentations will be on the web in a week and the answers to the question in a month or so. The presentations will be available at http://www.eere.energy.gov/hydrogenandfuelcells/wkshp_fuelcell.html.

MERIT REVIEW PROCESS

21. Please describe something about the application reviewers – where are they employed? What is their technical background? How is conflict of interest avoided?

Reviewers are picked based on their technical expertise and absence of conflict of interest. For instance, the reviewer cannot be an employee of the company that is submitting the proposal, nor have any financial interest in that company because that would be a conflict of interest. Generally, other federal employees, retired industry scientists, and peers are included. We will develop a conflict of interest form and disclosure certification. All reviewers will be required to sign these forms for each proposal they review. If the reviewer gets a proposal and discovers a conflict of interest that they did not realize beforehand, they are required to return the proposal and not evaluate the proposal and let us know immediately if there is a conflict of interest.

22. Who are the evaluators?

They have not yet been determined, however, the names of the evaluators are not made public for solicitations. They will be people who will not have a conflict of interest and who have technical expertise in the topic areas.

TEAMS

23. Are you planning a website forum to facilitate forming teams?

No, not at this time.

24. What is the distinction between a supplier and a subcontractor?

A simple distinction is that a supplier provides a specific item, whereas a subcontractor is a team member who accomplishes one of the tasks in the proposal. In submitting a proposal, a budget form is required for a subcontractor and it is not required for a supplier.

25. Can a university center submit without industry?

We encourage teaming so we would prefer that projects include partners, such as suppliers, industry, university, and national labs. Our preference is for teams rather than projects with only one recipient. One of the evaluation criteria is the strength of the team.

26. Would DOE consider including multi-state regional collaborations as part of the grant application under the Intergovernmental Option?

Yes, as long as the prime recipient is eligible for the application, it would be considered.

27. Is preference given to multidisciplinary teams? Inter-organizational teams? Does DOE like to see "platform managers" responsible for project management?

DOE strongly encourages teaming, which includes parties from outside of the proposing organization with complementary areas of expertise. We do not have a preference for a particular project manager.

28. Topic 1 indicates that a fuel cell manufacturer is recommended/required on the team. How absolute or important will this factor be?

In such instances, projects that include a fuel cell manufacturer would likely score higher in the teaming criteria; however, not including a fuel cell manufacturer would not disqualify the application. The adequacy of the fuel cell expertise on the team should be discussed.

29. Would a team comprised of university researchers and state-sponsored commercialization office personnel be eligible to propose?

Yes, the team would be eligible. State funds can be considered for cost share as long as the state funding does not originate from a federal source.

30. Is there a limit to the number of proposals in which a Co-Principal Investigator (Co-PI) can participate?

No. There is not a limit on the number of proposals in which any team member, including the Co-PI, can participate.

31. Are industries preferred team leads?

No. Universities, non-profits, small businesses, or any applicant that is eligible for this solicitation can be the lead. There is no preference on the team lead.

32. What are the guidelines for inclusion of Non-US companies or Non-US divisions of US companies?

This solicitation follows guidelines provided under the Energy Policy Act (EPACT). You will need to submit the EPACT eligibility form, which will be evaluated if selected. One aspect of an EPACT evaluation is that the primary benefit of the project must be to the U.S. That does not exclude a foreign company from being a lead or being a subcontractor. The foreign company cost share will count toward the overall project cost share.

33. We are a Canadian company and want to participate in this program. Is this possible?

Yes. Following the EPACT guidelines, Canadian companies can participate as long as the primary benefit of the project is to the U.S.

34. If the proposal is a domestic industry lead, does the cost-share of a foreign participant (e.g., a foreign fuel cell manufacturer) count toward the overall cost-share on the proposal?

Yes.

35. What is the limit on foreign content (percent of funding to be spent outside of the US) of the proposal? Is this an evaluation criterion?

There is no specific limitation percentage. The primary benefit has to be in the U.S.

36. Reginald Tyler said applications addressing both stationary and automotive will be given higher priority than proposals for just stationary. This runs counter to one of the web inputs Valri mentioned to keep stationary and automotive applications separate. How will you handle it?

The current emphasis is on automotive application but there is no specific cutoff between automotive and stationary applications. We would handle this through the program policy factor as far as the evaluation is concerned.

NATIONAL LABS

37. Could you clarify the process for national laboratories to be involved in a separate solicitation focused on related research?

DOE plans to issue a “Lab Call” for proposals in parallel to the Financial Agreement Solicitation. Only DOE national laboratories may respond as project leads to the Lab Call. DOE national labs are federally funded research and development centers (FFRDCs), and are restricted from directly competing with the private sector according to [OMB Circular A-110](#). Therefore, DOE national labs cannot respond as project leads on the DOE-issued Financial Assistance award—this would be considered a conflict of interest. Lab calls are a mechanism that DOE uses to receive proposals on work performed by DOE national laboratories, as the project lead, in topics of interest to DOE programs. Proposals are evaluated and awarded based on their technical merits. The labs can subcontract pieces of the work to companies or universities with specialized expertise, but the majority of the funding (>50%) should be used by the lab. Non-federal cost share is not required for lab calls, since the laboratory is an organization funded primarily by the federal government. Funding for the lab call is separate from funds for financial assistance projects (i.e., the funding for the lab call will not be subtracted from the \$70 million expected for the financial assistance solicitation). The lab call funding level has not yet been determined. Note that national laboratories funded by other agencies (e.g., NIST) can serve as the project lead on financial assistance awards. The lab call will be issued and managed through the Industry Interactive Procurement System (IIPS) {<http://doe-iips.pr.doe.gov/>}.

38. How can national labs participate in the general solicitation? Will cost share be required?

DOE national labs can participate as a project partner on a proposal to the financial assistance Request for Proposals (RFP) but their funding is limited to 50% or less of the total project funding. Also, labs can participate as partners on financial assistance projects only when the lab provides a unique service or expertise that is generally not available in the private sector. If the proposing team determines that partnership with a national lab is needed, it is the responsibility of the team to contact the lab and form the teaming arrangement, including the lab's task description and budget. The proposal should indicate the percentage of the project funds that will go to the lab. The DOE will establish a separate contract mechanism for paying the labs. For a financial assistance award, the lab funding will come out of the \$70M. The project team must make sure that the cost share is calculated on the basis of the total project funding (i.e., including the funding for the lab). DOE national labs cannot provide cost share since they are funded by DOE—all cost share must be provided by the other partners (industry, academia, state and local governments, and/or other organizations).

39. What is the cost of the Full-Time Equivalent (FTE) of a lab scientist and what is included in the FTE?

This varies by labs because they are contractor owned. Each laboratory establishes their own rates just like companies and universities. If you are interested in partnering with the lab, you should discuss the budget directly with the lab and include in your financial assistance application how much funding is anticipated for the lab. The cost is not evaluated in the technical merit of the proposal but would be considered in the programmatic criteria.

40. *Would lab funding, as part of a financial assistance package, be considered Cooperative Research and Development Agreement (CRADA) funding?*

No. It would not.

COST SHARE/BUDGET

41. *Clarify meaning of research vs. development with respect to cost sharing.*

Statutorily, research and development both require a minimum cost share of 20%. However, we may ask for a somewhat higher cost share (35%) for “development” phase projects. If we do this, DOE will provide a definition of what research is and what development is in the final solicitation.

42. *At a university, a typical cost-share is for the school to fund a study for the first year, and reduce tuition levels in subsequent year. Is that the sort of commitment you are looking for?*

Yes. Student tuition is a typical cost share when a university is involved.

43. *Is contingent cost-share permitted, e.g., if related funding is pending (e.g., non-federal) can it be used in proposed budget?*

No. Contingent cost share is not permitted.

44. *Can a program have a research phase with 20% cost-share followed by development phase with 30-40% cost-share?*

Yes.

45. *What role does the overall budget play in proposal evaluation?*

In the technical evaluation, the budget is not considered; however, the selection official may consider the budget during the program policy review since there will be limited funding for awards. A project with a very large budget may not be funded due to funding limitations even if it ranked highly in the technical evaluation process.

INTERNATIONAL COLLABORATION

46. *In regards to the international collaboration, will DOE coordinate with the foreign funding agencies such that funding by both partners will occur?*

DOE is working with the International Partnership for the Hydrogen Economy (IPHE) for ideas to coordinate and expand international collaboration and funding partnership opportunities. Those opportunities identified will be called out in the solicitation.

47. *Will there be additional money to support the international and/or intergovernmental topics?*

No, not under this solicitation.

TECHNICAL QUESTIONS ABOUT TOPICS

48. *Membrane Electrode Assemblies (MEAs) for regenerative fuel cells operated at high pressure (2,000 psig). Where does this fit into the solicitation?*

For clarification, the target tables state “up to” 2.5 atmospheres (atm). That does not intend to exclude any pressures lower than that. The target of 2.5 atm is provided only to describe the maximum pressure. The solicitation topics do not include regenerative fuel cells. DOE has a solicitation opened through July 25, 2005 that includes regenerative fuel cells. More information on that solicitation can be found at http://www.eere.energy.gov/hydrogenandfuelcells/program_solicitations.html#oxide.

49. *With reference to Technical Task Description #15 in the 2005 MYRDDP (page 3-95), should there not be an additional topic to investigate advanced MEA stability and durability using simulated “real” automotive duty cycles?*

The solicitation states that a durability protocol against the 2010 targets will not be issued until 2007, but that proposers will be expected to use that protocol to evaluate MEAs. We recognize that it will be difficult to write proposals for projects that will be evaluated against a durability protocol that has not yet been determined, but that is what DOE is asking you to do. We expect the forthcoming protocol to include start and stop cycles. We have a protocol now for a 2005 target, not necessarily a lifetime assessment but just durability, which will give you an idea of the kinds of things we might be looking for in the 2010 protocol. The 2005 target for durability with cycling for an 80kW_e (net) integrated transportation fuel cell power systems or an 80kW_e (net) transportation fuel cell stacks (both operating on direct hydrogen) is 2000 hours.

50. *Is there a priority of automotive over stationary applications in any or all of the topics?*

Yes. Automotive has priority over stationary.

51. *What is the relative weighting of automotive and stationary applications in criterion?*

There is no specific weighting between stationary and automotive other than automotive is higher priority. We will handle that through the appropriate policy factor.

52. *Please explain the term grams per kilowatt (g/kW) rated. Should it read grams of platinum group metal per kilowatt (g PGM/kW)?*

Not necessarily, it might just be grams of platinum.

53. *What is rated → for what power stack, 20 kW or small stack?*

The target for g/kW would be independent of the stack size so it does not matter what the stack size is; however, most of our target tables are set up with the basis of the transportation fuel cell system being an 80 kW stack.

54. What constitutes enough information for DOE to delete a topic from the list or de-emphasize topics?

The Fuel Cell Team, including members from DOE headquarters and the Golden Field Office, will be reviewing all of the comments on the solicitation draft that has been submitted today and via email. We will work as a committee to decide how to best address the comments so that the national interest is served.

55. Will DOE recognize that some of these projects should be small, exploratory efforts?

Yes, we expect that there will be a range. Not all the awards are expected to be the same size. We are expecting to fund some smaller efforts and some larger efforts.

56. How will DOE manage interactions between components/requirements? The stated approach examines components in a vacuum, without careful consideration of system interactions.

We are going to look at ways to incorporate requirements for MEA and stack assessment in the final solicitation, considering the environment the fuel cell will be in as well as understanding the interactions with the other components. Go/No-Go decisions will be used to evaluate the progress of membrane development against the technical targets (for example) before moving forward to MEA and short stack evaluations. All proposals need not include MEA and stack assessment.

57. Solicitation does not really clarify how we address cascade of effects or system. For example, how can the deliverable from Topic 1 be a stack if we only do membrane development? This cannot be done in a vacuum and necessarily includes work in other areas.

That is similar to other comments that we have received and again we are going to have to decide exactly how we are going to evaluate the system impacts. See response to question 56.

58. Will DOE consider failure modes and effects analysis a requirement for durability work? How does DOE anticipate prioritizing among decay modes?

It has been suggested that failure modes and effects analysis should be included in a few of the topics and we will work to make that happen; however, DOE does not plan to dictate in the solicitation the specific way that this should be done. This would be part of the applicant's proposal. DOE does not anticipate prioritizing decay mechanism, but will be looking for solutions to mitigate decay to the point that performance can be maintained over the life of the fuel cell systems according to the technical targets.

59. *The proposed criterion states that the potential to advance beyond the “state-of-the-art” is important. How will DOE establish the state-of-the-art?*

First, we will look at status against the target in the MYPP target tables. In addition, the evaluators and merit review committee will be experts in the fuel cell area and we will depend on their knowledge to assess the project's potential against the current state-of-the-art.

60. *Joint support of programs with National Aeronautics and Space Administration (NASA) would help leverage similar work on H₂/O₂ being carried out at Jet Propulsion Laboratory (JPL) and NASA Glenn Research Center (NASA-GRC). Issues are durability, power density, etc.*

We are currently working with NASA as part of the OSTP Interagency Hydrogen Task Force and through a project at JPL. We are working to leverage the activities at NASA and will continue to do that in the future.

61. *To our knowledge, DOE is currently funding two programs in the portable fuel cell area. Do you foresee more programs like these this year or next year? If yes, who is the point of contact?*

No, portable fuel cells will not be part of this solicitation. It was part of the last solicitation we ran in the 2003-2004 time frame. Those projects are still under way.

62. *Portable power was listed as one of the strategic program areas (on Monday morning during Steve Chalk's presentation). However, it does not appear to be part of the coming solicitation. Could you please comment?*

Portable power solicitation and awards were made last year. The on-going portable power projects are planned through 2008. Portable power projects were supported because of the near term market potential to help develop the manufacturing base for fuel cell systems. Future projects are focused on transportation to help alleviate the U.S. dependence on foreign sources of oil where fuel substitution, from gasoline to hydrogen, provides a long term strategy of domestically supplied fuel.

63. *Will the manufacturing initiative, apparently to be led by NREL, be included in this solicitation? Where will the funding for this proposed initiative come from; is it part of the \$70M from this solicitation or separate funds?*

No, the manufacturing initiative will not be part of this solicitation. The \$70 million does not include manufacturing. There is no funding requested for manufacturing in the FY2006 budget request.

64. *Could you please consider the addition of the following topics?*

- *Integrated system (FP & FC & BOP) development in response to market demand*
- *Field demonstration at customer end-user site under real world conditions*

This is a research and development solicitation, not a demonstration solicitation. All demonstrations will be funded through the technology validation subprogram. The international and interagency topic that is under consideration includes the development of a prototype stationary fuel cell system (5 kW) for assessment at an international, rural, or military site.

65. Will this solicitation include any technology validation? For example, funding the demonstration of near-term applications like back-up power or others?

No, this solicitation will not include demonstrations at all. The demonstration activities will be handled and managed out of the technology validation area. There will be separate solicitations for those projects. The next solicitation for technology validation projects is planned for the 2008-2009 timeframe.

66. Can project scope include sufficient product development for initial commercialization of a fuel cell component?

Development is part of this solicitation but demonstration and commercialization will not be part of this solicitation.

67. What about adding regenerative fuel cells, unitized MEAs?

These are currently not part of the solicitation. There is a small amount of activity in this area funded under hydrogen production. DOE has a solicitation opened with proposals due on or before July 25, 2005 that includes regenerative fuel cells. More information on that solicitation can be found at http://www.eere.energy.gov/hydrogenandfuelcells/program_solicitations.html#oxide.

68. Include solar hydrogen coupled fuel cell system for long-term performance studies on membrane and catalyst degradation.

This type of assessment would be part of the technology validation area. The next solicitation for technology validation projects is planned for the 2008-2009 timeframe.

69. Is there a separate call on membranes different from this call?

Yes. There is a separate membrane solicitation opened with proposals due on or before August 18, 2005. More information on that solicitation can be found at http://www.eere.energy.gov/hydrogenandfuelcells/program_solicitations.html#fuelcells. It is focused on smaller projects that are investigating innovative, "out-of-the-box" membrane concepts.

70. Please advise on how to test a high temperature membrane without a stable high temperature catalyst. It appears that Topics 1 and 3 are inherently linked, so why not list as a high temperature MEA? or Durable MEA?

DOE has received some other comments about linking some of these topics and looking more at the MEA. We need to review all of the comments that we have received for Topic 1, Topic 1-A in particular, and determine how best to handle them.

71. Could Topic 1A, Low Humidity Proton Conducting Materials, be assumed not to be for fuel cells but related devices?

Topic 1A is a fuel cell topic so we are looking at membranes for fuel cells in that topic. Related humidification devices would fall under Topic 6.

72. Include heterogeneous membranes (cheaper) for low temperature operations of PEM fuel cells.

We are not going to specify technology. We are looking at all approaches that can meet the technical targets.

73. Topic 2 (water transport) and Topic 5 (freeze tolerance) should be combined, since there is nothing specific in Topic 2 that justifies DOE support and the main driver for better fundamental understanding of water transport is freeze.

This is a comment previously received and it will be taken into consideration.

74. Topic 6 – Balance of Plant: Stress impact of impurities from BOP materials that can affect MEA or BOP development must be done with this as a requirement.

We will look at this comment with the other comments that we got on Topic 6, including recommendations to eliminate Topic 6.

75. It would be worthwhile to add a topic for heat dissipation (cooling) of the fuel cells.

That would fall under thermal management and will be part of Topic 6 if we keep Topic 6.

76. What will be the attitude toward applications on Topic 7 (impurities) if it is driven by the application only, meaning “non-conventional” impurities?

Topic 7 is included to develop improved understanding of the effects on PEM fuel cells of the impurities that are listed in the MYRDDP hydrogen quality table. We are looking to better understand the effects of these impurities on PEM fuel cell performance and durability.

77. How does Topic 7 differ or compliment ongoing work at LANL?

Topic 7 would build upon the efforts started at Los Alamos and provide additional information.

78. Will programs include topics on the Decay of PEM Cells due to operating conditions, cold start, hot operation, and start/stop?

Yes, the solicitation will look at this.

79. Would de-emphasis or elimination of topic areas result in re-apportionment of potential awards and budget such that certain “solicitees” are, as a result, afforded an advantage in the competitive award process?

If DOE eliminates one or more of the topic areas in the draft solicitation, then there may be more money available for the topics that remain, which would allow DOE to fund more or larger projects in those areas, assuming these projects are determined to be meritorious during the review process.

80. *Why no support for DMFC? The DMFC technology is far from perfect for commercialization and sure can use some serious R&D. We hope that DOE will see this as an area for funding.*

We currently have several projects in the program with go/no decisions in 2006. DMFC is not a major focus of the program (see response to question 62).

81. *Will there be a potential "Phase 2", where we will have a site demonstration of fuel cells working in tandem with other energy assets in an "integrated energy system"(say, heaters, chillers, turbines, fuel cells, etc.) working together?*

No, this type of activity would be part of the technology validation area. The next solicitation for technology validation projects is planned for the 2008-2009 timeframe.

82. *General comment: Additional topics concerning other types of fuel cells should be eliminated*

This comment will be considered.

83. *Comments in specific areas*

A. *Membrane - MEA*

- *eliminate inorganic membrane*
- *re-state this area as MEA with clear performance, cost, and durability targets (simultaneously achieved) for automotive applications*
- *separate PBI-based MEA into stationary area*
- *separate targets (cost, durability, performance) for stationary to cover PEM and PBI*
- *For automotive and stationary, include requirements to study mechanical property effects on durability and cost/performance impacts*

B. *Catalysts*

- *eliminate catalyst support corrosion studies—problem already solved at private expense*
- *include more fundamentals for cyclic durability and PGM stabilization*

These comments will be considered when drafting the final solicitation topics.

84. *Comment: Novel fuel cell concepts that advance the development of fuel cell vehicles outside of the current fuel cell DOE development targets should be considered (e.g., fuel cell systems that could partially or fully displace the function of the battery, lowering the total weight, volume, and cost of the combined fuel cell and battery systems).*

This could be something submitted in the innovative concepts topic. Additionally, there is an electrochemical storage program in the vehicular technologies area that focuses on the battery.

85. *What is the attitude to the comment listed on your slide of comments for Topic 4 to exclude separation between metal and graphite plates? Please clarify.*

The targets are system-driven so it does not matter what materials are used for the bipolar plates. They still need to meet the same costs, durability, and performance targets; therefore, it seems to make sense not to specify the materials in the solicitation topic.

86. Non-invasive diagnostics of fuel cell stacks is an important problem. Is this included in a research topic area?

We will have to consider that with some of the other comments we have received related to testing and in situ and ex situ analysis. Diagnostics of stacks is not currently included. This solicitation is more component, development focused.

87. In all topics should there perhaps be a focus on the development of tools and methods for in situ and ex situ evaluation of key parameters especially for water management/freeze capability?

We will be taking this comment as well as other related written comments into consideration and try to work them into this solicitation.

88. Nothing on design of 3 phase boundary (3PB) region result from 3M/ETEK/BNL. Emphasize this importance.

We will consider trying to put that into a modeling activity.

89. Does a non-PEM fuel cell concept have to be "low-temperature" to be considered under novel concepts?

Under the novel concepts topic, we are looking for technologies that meet the technical requirements while taking into consideration the needs of the automotive system or stationary system. The concepts should show the path to meet the targets that are established in our target tables under the constraints of the application.

90. Catalyst design/discovery is today, at best, an intuitive process. The DOE components effort would benefit from supporting development of a "physiochemical rationale" alongside with a "hit or miss" type of catalyst discovery.

The development of a "physiochemical rationale" for catalyst discovery in a Topic 3 proposal is an approach to catalyst development that could be submitted as a proposal, but that specific catalyst discovery process would not be dictated in the solicitation topics.

91. If we have a project outside the 7 topics listed, how would we apply for grants?

You will only be able to submit proposals to the topics that are in the solicitation. The reason we are having this workshop and accepting any comments is to make sure that we have the right topics and the right focus for the solicitation so this is your opportunity today to say what is missing.

92. Who (and how) decides on criteria, e.g., what is low platinum content, what is a durable membrane, and how to test high activity of a catalyst without a (standard) membrane and vice verse?

The targets and criteria in the target tables have been established in cooperation and partnership with industry. They have been set to maintain the performance, cost, and durability that the consumer purchases today. There are routine methods that are used by industry to characterize membranes (conductivity) and catalysts (rotating ring disc electrode) and those will continue to be used.

Additionally, a testing protocol for the 2010 durability target is being developed by the FreedomCAR Fuel Cell Technical Teams and will be issued in 2007. The solicitation will reference this protocol that is under development.