

**SMART ENERGY CHALLENGE (SEC)  
Request for Proposal (RFP)**

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| <b>Scope of RFP</b>                       | Request for proposals in:<br>(a) Power Generation<br>(b) Energy for Transport<br>(c) Energy Efficiency for Industry  |
| <b>RFP Number</b>                         | EMA SEC 11/2009  |
| <b>Category</b>                           | Open Call  |
| <b>Publication Date</b>                   | 20 November 2009   |
| <b>Closing Date &amp; Time</b>            | 20 February 2010, 4.00 pm (Singapore Time)   |
| <b>Proposal Submission</b>                | <p>(a) Softcopy via email to <a href="mailto:ema_erdf@ema.gov.sg">ema_erdf@ema.gov.sg</a> by 20 February 2010, 4.00 pm, Singapore time;</p> <p align="center">AND</p> <p>(b) One hardcopy duly signed and endorsed. It shall be printed on both sides in a booklet form and submitted in a sealed envelope by 20 February 2010, 4.00 pm, Singapore time to:</p> <p align="center">The ERDF Secretariat<br/>Energy Market Authority<br/>991G Alexandra Road #01-29<br/>Singapore 119975</p> |
| <b>Application Procedures &amp; Forms</b> | Please refer to website: <a href="http://www.ema.gov.sg">http://www.ema.gov.sg</a>   |

## Background

1 Energy security and climate change have emerged as key priorities in the policy agendas of governments across the world. Many countries have invested significantly in initiatives to tackle these issues.

2 The issue of energy security is even more pertinent for Singapore. Without indigenous resources, we are a price taker when it comes to energy. About 80 percent of our electricity is produced from piped natural gas imported from Malaysia and Indonesia via four gas pipelines. We also import all of our crude oil. While we have the capacity to deal with any short-term disruption, our energy security over the long run will depend on our ability to diversify our energy sources.

3 Climate change is a global problem that needs a global solution. Singapore accounts for less than 0.2 percent of global emissions. Furthermore, unlike many bigger countries, we face serious limitations in switching to alternative energy sources. Nevertheless, we must be prepared to do our part as a responsible global citizen to tackle climate change. This year, we launched the Sustainable Development Blueprint, which represents a major national effort to use energy more efficiently and reduce our emissions. In particular as part of the Blueprint, we have set a target to reduce our energy intensity by 35 percent from 2005 levels by 2030.

4 Across the world, technological advances have given impetus to the development of new energy solutions to improve energy security, tackle climate change and sustain economic growth. The clean and renewable energy sector is growing rapidly, energy services companies are offering more efficient solutions, utility companies are modernising their power grids and test-bedding smart grid technologies, and even the transportation sector has been invigorated with the development of electric vehicles by almost all major automotive manufacturers. These factors also serve as strong motivators for Singapore's focus on the energy sector as a new growth area.

5 Against this backdrop, the Energy Market Authority (EMA) has set up a \$25 million Energy Research Development Fund (ERDF) to provide financial support for the implementation of new and innovative energy solutions to address the following goals:

- (i) Diversify Singapore's energy sources and improve our energy security;
- (ii) Help achieve Singapore's energy intensity reduction targets; and
- (iii) Develop Singapore's energy industry.

6 Rather than focus on pure research, the ERDF is intended to seek out projects, which are close to deployment and have the potential to provide impactful and tangible results. Hence emphasis will be given to projects that show potential to be economically competitive in the future, especially after taking into consideration the trend of rising oil prices<sup>1</sup> and growing carbon constraints. The funds from the ERDF will be used to support proposals for projects submitted through the inaugural Smart Energy Challenge (SEC). The SEC will provide funding of up to \$5 million per project for the development of ideas that address Singapore's energy goals.

## **Scope of the SEC**

7 The EMA invites proposals for innovative projects to be submitted as part of the SEC. The proposals should meet at least one of the above goals for the ERDF. Proposals can be in the following three focus areas:

### **(a) Power Generation**

While the scope for deployment of clean and renewable energy sources may be limited for Singapore, technology is steadily evolving and solutions that are not feasible today may become feasible in the future. For example, new solar energy technologies and next-generation biofuels (which do not compete with food production) are promising areas to explore. Even with fossil fuel power, there is the potential to generate electricity in a cleaner and more sustainable method with technologies like carbon capture and utilisation. The SEC seeks proposals for innovative solutions in power generation that can improve Singapore's energy security and meet our overall energy intensity reduction targets.

### **(b) Energy for Transport**

Singapore's transportation sector accounts for about 13 percent of our overall energy consumption. There is therefore an imperative to reduce our transport system's carbon footprint by improving fuel efficiency and exploring alternative energy technologies to power our vehicles. One promising area is the development of electric vehicles (EVs), which are more efficient than internal combustion engines. There is also the possibility of EVs providing platforms for energy storage and selling electricity to the power grid during times of peak demand. However, more work needs to be done in terms of developing the infrastructure solutions for EV charging and the interface for energy storage and connection to the grid. In this context, the SEC seeks proposals for innovative solutions in

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<sup>1</sup> The International Energy Agency (IEA) has forecasted in its World Energy Outlook publication in 2009 that oil prices could reach US\$102 a barrel by 2020 and US\$118 a barrel by 2030 (all prices are quoted in 2009 dollars).

advancing the deployment of EVs in Singapore, or in other areas of clean transportation.

### **(c) Energy Efficiency for Industry**

Energy efficiency solutions have emerged as a key focus area in countries worldwide since they present great potential in reducing emissions and saving electricity costs in an increasingly carbon constrained world. Many companies providing innovative solutions, which can help consumers optimise electricity usage, have emerged recently and this is beginning to grow into a niche industry. In Singapore, improvements in the way industry use electricity represent a good opportunity for a significant leap in achieving our energy intensity goals. There is a wide spectrum of solutions that can be explored in this area ranging from novel manufacturing processes which use energy more effectively, to improved cooling systems for data centres and even systems which amalgamate and recycle waste heat generated from industrial processes for electricity generation. In this regard, the SEC seeks proposals for new concepts and innovative solutions, which can help improve energy efficiency for industry.

### **Project Duration and Project Schedule**

8 The project duration, including implementation of the solution, completion of the final report and all miscellaneous project activities, shall not exceed three (3) years. The proposed project schedule shall include major milestones and allow time for the preparation of final report and for review of the project results.

### **Eligibility and Funding Support**

9 This RFP is open to all Singapore-based Institutes of Higher Learning (“IHL”), public sector agencies, not-for-profit organisations/research laboratories and private sector companies, as well as company-affiliated research laboratories/institutions with an interest in R&D and test-bedding technologies and solutions relating to energy security, energy efficiency and development of a competitive energy industry in Singapore. Collaborations among the above organisations are allowed too. The roles, responsibilities and level of participation of each partner shall be clearly specified.

10 Up to 25% of the funding awarded may be used to support overseas R&D activities, while the remaining 75% of the funding awarded or more must be used to carry out the research activities in Singapore. This shall be assessed and approved on a case-to-case basis. Projects with 100% of their research activities carried out in Singapore will be given priority in the eligibility assessment.

11 IHLs, public sector agencies and not-for-profit organisations will qualify for up to 100% funding support of approved direct qualifying costs of a project. Private sector companies will qualify for up to 70% of the approved direct qualifying costs of a project. Only IHLs and not-for-profit entities will be allowed support for indirect costs. These include up to 20% of qualifying costs for overhead costs.

12 Disbursement of funds will be made on a reimbursement basis i.e. the applicant will only be reimbursed for expenses that have been incurred. Direct payment to the applicant's creditors is prohibited. Claims and reimbursements will be made on a quarterly basis up to a cumulative total of 70% of approved direct qualifying costs of a project. The remaining 30% will be held back until the satisfactory completion of the project. The first disbursement may be effected after acceptance of offer subject to a maximum of 70% of the grant approved. The final claim should be submitted within 6 months of completion of the project.

13 The cost of each project proposal should not exceed S\$5 million.

### **Evaluation Criteria**

14 Proposals submitted will be evaluated against the following criteria:

- i. **Relevance of the project to the SEC's three key areas**  
The project must be within the scope of the three key areas: Power Generation, Energy for Transport and Energy Efficiency for Industry.
- ii. **Economic potential and value add to Singapore's energy sector**  
The outcome of the project, if implemented at a larger scale, will have the potential to contribute strategic and economic value to Singapore's energy sector.
- iii. **Project management**  
Clear outline of project deliverables and milestones must be submitted and achieved for every six-month period in order for the funding to be continued.
- iv. **Reasonable budget**  
The amount of funding requested for the project shall commensurate with its economic value and strategic benefits for Singapore's energy security.

v. **Team member profiles**

The suitability of the team based on field of expertise, present level of research performed for the project and preliminary studies performed for the project.

15 The applicant shall fully comply with the requirements of the SEC. Failure to comply with or any breach of any Terms and Conditions for SEC may disqualify the applicant. Competency and experience of each prospective applicant and the degree of comprehensiveness of its RFP submission will be the main considerations in the award of this RFP.

**Disclaimer**

16 Information contained in this RFP has been conveyed in good faith. However, applicants are advised to verify and seek clarifications should they have any queries.

**Language**

17 The RFP and all supporting document supplied by the applicant shall be written in the English language.

**Withdrawal of Proposal**

18 No proposal shall be withdrawn after the closing date prescribed in the RFP to the applicant. Any applicant who attempts to do so may, in addition to any remedy which EMA may have against it, be debarred from future RFPs put out by EMA.

**Enquiries**

19 For any enquiries or clarifications on the SEC, please email the ERDF Secretariat at [ema\\_erdf@ema.gov.sg](mailto:ema_erdf@ema.gov.sg)

## Submissions and Results

20 The 1<sup>st</sup> RFP for the SEC is launched on **20 November 2009** and shall close on **20 February 2010, 4.00 pm, Singapore time**. The applications for the SEC shall be submitted as follows:

- i. Softcopy via email to [ema\\_erdf.ema.gov.sg](mailto:ema_erdf.ema.gov.sg) by **20 February 2010, 4.00 pm, Singapore Time**; AND
- ii. One hardcopy proposal duly signed and endorsed. It shall be printed on both sides in a booklet and submitted in a sealed envelope by **20 February 2010, 4.00 pm, Singapore Time** to:

The ERDF Secretariat  
Energy Market Authority  
**991G Alexandra Road, #01-29**  
Singapore 119975

21 Successful proposals will be notified by **May 2010**.

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