**WASTE-TO-ENERGY (WTE) TEST-BEDDING AND DEMONSTRATION**

**FUNDING INITIATIVE (FI)**

**REQUEST FOR PROPOSALS (RFP) ON**

**WTE TEST-BEDDING AND DEMONSTRATION PROJECTS**

**Instructions and Templates for Applicants**

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**Part 1 General Instructions**

1. The WTE Test-bedding and Demonstration FI is a research grant scheme administered by the National Environment Agency (NEA) to fund the test-bedding or demonstration of technologies that can contribute to the increase of the electrical efficiency of commercial scale WTE plants to 27% or higher, improve the process efficiency and/or reduce energy consumed in plant processes.
2. Applicants are to source for premises/facilities for the test-bedding or demonstration on their own prior to submitting the proposal. Applicants may choose to use the Nanyang Technological University (NTU) WTE Research Facility (WTERF)[[1]](#footnote-2) at 18 Tuas South Street 11, Singapore (636898). Applicants wishing to use the WTERF shall first consult NTU to assess the technical feasibility for using the plug-and-play features and interfacing works to execute the project, and to clarify on the usage charges, other costs and end-user requirements.
3. The project funding application shall be submitted to WTE\_TD\_FI@nea.gov.sg. The Terms and Conditions of the funding support and the administration of project shall take guidance from National Research Fund (NRF) Guide and all applicants shall be bounded with full notice and knowledge of the contents of the **“(5) Guidelines for the Management of Competitive RnD Grants”,** and **“(6) Terms and Conditions for Competitive Grants”,** which may be subject to revision. Updated versions are expected to be uploaded on the grant call website in Jan 2020.
4. Project proposals shall be submitted **by the grant closing deadline** as follows:

1. A softcopy of the completed application with numbered pages in PDF format and the funding details template **“(4) Annex 3 Funding Details”** in Excel format. All application forms shall be consolidated into one zipped file.

1. All applications must be endorsed by the Director of Research or Head of Organisation (or equivalent).
2. Proposals will be evaluated by NEA and where applicable, the deployment schedule of awarded projects at the WTERF would be subject to the plant operational availability. All information needed for a proper and complete evaluation should therefore be included in the application to facilitate a good understanding of the projects. Privileged or confidential information shall be clearly marked as confidential.
3. The applicant(s) shall agree that:
4. The NEA is under no obligation to award research grant in whole or in part to any proposal;
5. Applicants shall abide by the decisions of the NEA; and
6. Applicants shall not take legal action against the NEA, or any other persons in relation to their roles in evaluating the project proposals.
7. The evaluation of proposals may take 5 months from the close of this RFP, and thereafter the notification of award will be issued to the successful applicant(s).

**Part 2 Format for Project Application**

**1. Outline of submission**

The outline for the project submission format is as follows:

Executive Summary (up to 1 page)

Main Project Paper

Project Proposal (up to 7 pages)

Technical Attachments (up to 4 pages)

Declaration Form

Table of Annexes

Annex 1 Curriculum Vitae (up to 2 pages per team member)

Annex 2 References and Synopsis of Papers (up to 2 pages)

Annex 3 Funding Details (Excel format)

Please use Arial Font size 12. All submissions shall be in English.

**2. Executive Summary (up to 1 page)**

The Executive Summary shall include but not be limited to the following details:

**Project Title**

A succinct and comprehensible title.

**Scientific Abstract** (not more than 300 words)

A scientific description of the project proposal including objectives, specific challenges, hypotheses, methodology and approach of the research proposal.

**Lay Abstract** (not more than 300 words)

An abstract written in simple and non-technical language. This information may be used by the NEA for public communication purposes.

**Deliverables**

The tangible outcomes and deliverables of the project, and deployment or commercialisation plans.

**3. Project Proposal (up to 7 pages)**

**3.1 Project Proposal**

The main project paper shall contain but not be limited to the following details:

**Objectives of the Project** (not more than 100 words)

This section shall articulate clearly the objectives of the project.

**Description of Project**

* This section shall explain the current scientific challenges and the proposed methodology/approach to solving the challenges.
* The Applicant shall highlight the importance of addressing the problems and describe how their work would create new knowledge or advance existing solutions. The Applicant shall highlight the novelty of their proposed approach and the potential of producing breakthrough work.
* The Applicant shall highlight the specific competitive advantages of the individual members in the proposed research project team in terms of unique capabilities and/or experience relevant to the project scientific focus. This section shall also be used to highlight the international competitiveness of the work being carried out in terms of scientific merit.
* The Applicant shall also highlight the environmental footprint (e.g. CO2 emissions, net energy consumption, residual waste generation, etc.) and cost-benefit of the research project and benchmark them against competing technologies.

**Other Contributions of Project**

* This section shall be used to describe the contributions of the project in terms of science, technology, capability development, economic and other benefits to Singapore. Any industry collaborations and/or co-funding arrangements and details on the extent of industry participation and plans for commercialisation shall be included in this section.
* The Applicant shall highlight both quantitatively and qualitatively how the project would potentially generate economic payoffs for Singapore (e.g. through the potential to create new products and applications and create spinoffs/intellectual properties/ licensing, etc.).
* The Applicant shall also indicate other contributions of the project (e.g. towards building up research infrastructure, manpower and capabilities in Singapore etc.).

**Project Team Composition**

* The Applicant shall highlight the relevant track records and capabilities of individual members in the team, their international standing and any unique competitive advantages that they bring to the team in achieving the project’s objectives. Detailed CVs for the Applicant and the project team members shall be attached as Annex 1 in the application.
* The Applicant shall highlight the involvement of local and/or international collaborators and articulate the value such collaborations bring to the project.

**Project Management**

* The Applicant shall provide an overview of the proposed project management structure and plans to increase the success rate of achieving the project objectives.
* The Applicant shall also highlight the international competitiveness of the project being proposed.

**Deliverables of Project**

* The Key Performance Indicators (KPIs) for the FI are described in the table below and the Applicant shall state the proposed achievements of the project using the table.
* The KPIs proposed shall be linked to the objectives of the project with appropriate means of tracking/measuring the success of the project.
* The Applicant shall describe the number of Technology Disclosures (e.g. patents or intellectual properties) to be generated, tied to the specific areas of the research.
* The Applicant shall also use this section to highlight important outcomes that can be expected from the successful execution of the project.

|  |  |
| --- | --- |
| KPIs | Proposed achievements |
| Amount of industry spending in cash ($) or/and in-kind contributions (in-kind details to be described in the proposal) |  |
| No. of industry RSE jobs\* |  |
| No. of technologies deployed (please describe, including licenses) |  |

\* Industry RSE jobs refer to researchers, scientists and engineers hired in the industry (i.e. excluding academia staff) for the project.

**Detailed Project Schedule**

* The Applicant shall state the estimated project duration in terms of calendar months. For Applicants who wish to use the WTERF, it is essential to first consult NTU to gauge the timeline in connection to the use of the WTERF.
* The Applicant shall also include a detailed project schedule (e.g. project time-line, Gantt chart) of major project activities and the milestone checkpoints. The Applicant shall give a brief description of each milestones and deliverables of the project. A sample format which you may like to follow is shown below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Milestones & Deliverables\* | Project Implementation Schedule | | | | | | | |
| Year 1 | | | | Year 2 | | | |
| Mth  1-3  Q1 | Mth  4-6  Q2 | Mth  7-9  Q3 | Mth  10-12  Q4 | Mth  13- 15  Q1 | Mth  16-18  Q2 | Mth  19-21  Q3 | Mth  22-24  Q4 |
| a. |  |  |  |  |  |  |  |  |
| b. |  |  |  |  |  |  |  |  |

*\** Deliverables refer to the objectives indicated in your original project proposal. This is to clearly state what applicant expects to achieve and deliver at the end of the project.

**Cash-Flow Projections**

The Applicant shall state the estimated cash-flow for the project duration by each quarter of the year. For Applicants who wish to use the WTERF, it is essential to first consult NTU on the potential expenses.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cash-flow Projection | Year 1 ($) | | | | Year 2 ($) | | | |
| Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Expenditure on Manpower (EOM) |  |  |  |  |  |  |  |  |
| Equipment |  |  |  |  |  |  |  |  |
| Other Operating Expenditure (OOE) |  |  |  |  |  |  |  |  |

The following are examples of items that can be considered for funding support. For Applicants who wish to use the WTERF, usage or rental fees charged by NTU will not be fundable.

* Design works and customisation
* Fabrication of equipment and materials
* Installation and commissioning
* Data acquisition and analytical instrumentation
* Removal and reinstatement works

**3.2 Declaration of other funding support**

The Applicant shall provide the details for all grants currently held or being applied using the format given below. Grants include those supported by or currently under consideration by NRF, A\*STAR, MOE, other public funding agencies, etc. (e.g. PUB, TEC, IES) and the universities.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Grant Title & ID | Funding Agency | Status | Amount  (S$ ’000) | Years of Support | Expiry Date | Role Played |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**3.3 Declaration on whether Research work involves Genetically Modified Organisms**

Research work involving Genetically Modified Organisms (GMOs) is governed by the “Singapore Biosafety Guidelines for Research on Genetically Modified Organisms (GMOs)” issued by the Genetic Modification Advisory Committee (GMAC) of Singapore. The Applicant shall declare using the table below whether the proposed research work involve the use of GMOs, be responsible for risk assessment and management and seek the approval of the Institutional Biosafety Committee (IBC) where required.

|  |  |
| --- | --- |
| This Project involves the use of Genetically Modified Organisms (GMOs). | Yes /No\* |
| If yes, please indicate the Category of research work according to the “Singapore Biosafety Guidelines for Research on GMOs”. (Refer to http://www.gmac.gov.sg) | A / B / C\* |
| Note: For Category A or B projects, please attach IBC’s approval letter together with proposal submission. For Category A, Applicant shall submit GMAC acknowledgement before commencing the project. | |

\* Delete where not applicable

**4. Technical Attachment (up to 4 pages)**

The project proposal shall contain up to four pages of technical attachment and may include the following:

* Schematics diagram of the process;
* Photographs;
* Technical brochures; and
* Laboratory test results etc.

**5. Declaration Form**

The applicant shall include a scanned, duly signed and endorsed Declaration Form. The format of the Declaration Form is shown below.

**Declaration Form**

I declare that the facts stated in this application and the accompanying information are true. I declare that my Organisation is also free from any litigation pertaining to the project in Singapore or overseas.

|  |  |  |  |
| --- | --- | --- | --- |
| Project Title |  | | |
| Organisation |  | | |
| Principal Investigator  (Applicant) |  | Contact Number |  |
| Designation |  | E-mail Address |  |
| Mailing Address |  | | |
| Signature and Date |  | | |

|  |  |  |
| --- | --- | --- |
|  | Project Supported[[2]](#footnote-3) by | Project Endorsed[[3]](#footnote-4) by |
| Name |  |  |
| Designation |  |  |
| Signature and Date |  |  |

**6. Notes on Annexes**

**Annex 1: Curriculum Vitae (CV) (up to 2 pages per researcher)**

The Applicant shall include his/her CV and project members’ CVs in the proposal. Each CV shall be limited to two pages and applicants are advised to use the accompanying **“(3) CV template”**.

**Annex 2: References and synopses of papers (up to 2 pages)**

The Applicant shall include the references that are relevant to the project proposal. The Applicant may also include synopses of papers as part of Annex 2. The Applicant shall submit the full paper upon request.

**Part 3 Detailed Budget Estimates**

**Funding Details**

1. The Applicant shall use this section to provide breakdown of the project budget required to carry out their proposed research project. Applicant shall include the amount of Goods and Services Tax (GST) which they expect to pay based on prevailing GST rates separately in their project budget.

2. The following categories of organisation will qualify for up to 100% funding support of approved Qualifying Direct Costs:

* Institutes of Higher Learning (IHLs);
* Public Sector Agencies; and
* Not-for-profit Organisation and Research Institutions

Companies and For-Profit Research Entities shall qualify for up to 70% of the approved Qualifying Direct Costs of the project.

3. The Applicant shall provide the detailed budget estimates for each of the following cost items:

1. Expenditure on Manpower (EOM)
2. Equipment
3. Other Operating Expenses (OOE)
4. Overseas Travel Related Expense
5. Research Scholarship

4. The format on how to fill up the Funding Details is shown after this paragraph. The Applicant shall use the excel spreadsheet **“(4) Annex 3 Funding Details”** to tabulate a list of the requested funding items. The Applicant shall use one row for each cost item and may insert additional rows accordingly. The Funding Details spreadsheet shall be submitted together with the application. The Applicant shall read **“Annex A Notes on Funding Details”** in this document and the **“(5) Guidelines for the Management of Competitive RnD Grants”** for guidance and additional information of the funding details.

5. For joint applications between multiple organisations, **“(4) Annex 3 Funding Details”** shall be furnished with additional sheets indicating the requested funding items for each organisation.

6. The Applicant should indicate all funding in cash, in-kind services, and tangible contributions by industry collaborators or any other partners towards the proposed project. In-kind services include labour, materials, and other services such as loan of facilities and space.

**Annex A**

**Notes on Funding Details**

**1 General Instructions**

The Applicant shall use the **“(4) Annex 3 Funding Details”** spreadsheet to fill in the requested grant amount and submit it together with the project proposal. Applicant shall check that the numerical inputs and all calculations in the submission are correct. Please indicate "Not Applicable" (N.A.) for items that do not require funding. All amounts shown in the project submission shall be in Singapore Dollars. GST amount is to be included separately for all Qualifying Direct Costs items.

**2 Expenditure on Manpower (EOM)**

2.1 The grant will reimburse the Expenditure on Manpower

* EOM for research staff who are employed specifically to conduct and support R&D content of the project.
* Existing staff whose salary depend solely on the R&D projects secured may be considered for funding and eligibility for reimbursement. Please provide justification in a separate attachment.

2.2 Funding of research staff under the grant must comply with prevailing and consistently applied human resource guidelines of the employing Host/Partner Institution(s), regardless of the source of funds. (Please refer to **“(5) Guidelines for the Management of Competitive RnD Grants”** for more detailed exclusions, and **“(6) Terms and Conditions for Competitive Grants”** for the definitions of Host/Partner Institution(s).)

2.3 The Applicant shall provide the following justifications for each personnel requested including but not limited to:

* A detailed job scope,
* Justification for time required,
* Qualification/expertise required.

**3 Equipment**

3.1 The Applicant shall provide the basis and justification for the purchase of any equipment in addition to the following information for the consideration of funding:

* the purpose of the equipment,
* how it would be applied to the project, and
* formal established and consistently applied policies of the Host/Partner Institution(s) making the equipment purchase.

3.2 The Applicant shall declare whether similar equipment currently exists within the organisation for each piece of equipment that is proposed to be purchased. For equipment, which already exists within the organisation, the Applicant shall make internal arrangements to use or rent the equipment.

3.3 For Applicants who wish to purchase new equipment (which already exist within the organisation), the Applicants shall show evidences that they would not be able to rent or utilise the existing equipment. For example, Applicants may provide photocopies of the logbooks showing that the existing equipment are overused or statements from the equipment owners on why the equipment could not be shared.

3.4 Cost of capital works, general infrastructure, general purpose IT and communication equipment, office equipment, and furniture and fittings shall not be supported.

3.5 Only specialised and dedicated software used for the project shall be supported. Software for general office use shall not be supported.

3.6 Notwithstanding, all items claimed must further comply with the formal established and consistently applied internal procurement processes, guidelines and policies of the Host/Partner Institution(s).

**4 Other Operating Expenses (OOE)**

**4.1 Materials and Consumables**

Examples of supported items are specialised laboratory supplies, materials and consumables. Examples of items that are not supported are stationery, printer consumables, basic laboratory consumables, books, journals, manuscript and reports. Publication in professional journals may be funded.

**4.2 Sub-Contracting of Non-Research Work**

This refers to non-research work such as analytical testing**,** use of specialised laboratory and development of tools for the research. Professional services from a foreign company are allowed only if such services are not available in Singapore.

**4.3 Rental of Equipment and Maintenance Cost**

The Applicant shall provide the cost breakdown for the rental of each piece of equipment and compute the cost based on the utilisation time and the charge rate for each piece of equipment. The maintenance cost for equipment bought under the supported project can be claimed under OOE. Rental for existing equipment (funding of equipment already present and acquired via rental before the award of the grant) will not be supported.

**4.4 Visiting Professors/Experts**

Funding for Visiting Professors/Experts is not allowed unless specifically relevant to meeting the milestones and deliverables of the project. Justification, in addition to the following information must be provided for the consideration of funding:

* Identity of the Professor/Expert
* Area of contribution in the project
* References to relevant awards, works, publications, projects demonstrating the expertise and research interest of the Professor/Export
* Existing formal established and consistently applied policies of the Host Institution on funding of visiting Professors/Experts

**5 Overseas Travel Related Expenses**

Funding of Overseas Travel is not allowed unless specifically relevant to meeting the milestones and deliverables of the project. Justification, in addition to the following information must be provided for the consideration of funding:

* Justification that conference participation is directly relevant to the research area outlined in the project and necessary to accomplish project objectives.
* Existing formal established and consistently applied travel policies of the Host/Partner Institution(s) regardless of the source of funds.

**6 Research Scholarship**

Funding support for Research Scholarship is not allowed unless specifically relevant to meeting the milestones and deliverables of the project. Should funding support be required, postgraduate stipend must align with the prevailing rates set by the Ministry of Education. Postgraduate stipend and tuition support will not attract indirect costs.

**7 Overhead Costs**

The following costs would be deemed as Overhead Costs:

* Audit, legal, marketing or professional and consultancy fees
* Utilities and telecommunications costs
* Maintenance and repairs of existing equipment and facilities
* Lease/Rent of land
* Indemnity Insurances
* Purchase of books, manuscripts or reports
* Patent cost
* Professional membership fees
* Staff retreat

Only IHLs, public sector agencies and not-for-profit research organisations may qualify for an additional 20% of their total Qualifying Direct Costs, excluding Research Scholarship that can be utilised for such Overhead Costs. IHLs, public sector agencies and not-for-profit research organisations **should NOT** include the above costs in their budget estimates.

Other entities may propose the above items under their OOE budget estimates, subject to approval.

**8 Other Contributions**

All funding in cash, in-kind services, and tangible contributions by the Applicant, industry collaborators or any other partners towards the proposed project. In-kind services include labour, materials, and other services such as loan of facilities and space.

1. The development of the WTERF is co-funded by NEA as part of WTE Programme funding initiative to facilitate the test-bedding and demonstration of WTE related technologies. NTU oversees the operation and maintenance of the WTERF. [↑](#footnote-ref-2)
2. Project is to be supported by the Head of Department or equivalent. [↑](#footnote-ref-3)
3. Project is to be endorsed by the Director of Research or Head of Organisation or equivalent. [↑](#footnote-ref-4)