

# **U.S. - Israel Center of Excellence** in **Energy, Engineering and Water Technology**

*(The U.S. – Israel Energy Center)*

## **Procedures Handbook**

**Issued by: BIRD Foundation**

**Version: F8**

**Date:** July 28, 2020

### **BIRD Foundation Contacts for Questions on these Procedures**

<b>Name and Position</b>	<b>Email</b>	<b>Phone #</b>
Ms. Chava Doukhan, Office Manager	<a href="mailto:chava@birdf.com">chava@birdf.com</a>	+972-3-6988307
Ms. Tal Fischelovitch, Energy Center Manager	<a href="mailto:talf@birdf.com">talf@birdf.com</a>	+972-3-6988301
Ms. Natalie Galperin, CFO	<a href="mailto:natalie@birdf.com">natalie@birdf.com</a>	+972-3-6988305
Ms. Maha Wakileh, Information Systems Manager	<a href="mailto:maha@birdf.com">maha@birdf.com</a>	+972-3-6988303

## TABLE OF CONTENTS

	<u>Page</u>
<b>1 Establishment Evolution, Impetus and Goals of the Energy Center</b>	<b>5</b>
1.1 The Impetus for Establishment of the Energy Center	5
1.2 The Goal of the Energy Center	5
<b>2 Topic Areas of Research Priorities</b>	<b>5</b>
2.1 Introduction	5
2.2 Topic Area #1: Fossil Energy - Awarded	6
2.3 Topic Area #2: Energy Storage - Awarded	7
2.4 Topic Area #3: Development of Tools and Technology for Energy Cyber and Cyber-Physical Security in Critical Infrastructure	8
2.5 Topic Area #4: Energy Water Nexus - Awarded	9
<b>3 Grant Awards Model of the Energy Center</b>	<b>10</b>
3.1 Overview	10
3.2 The Award Applicants – A Consortium	11
3.3 Proposal Characteristics	11
3.4 Funding Sources and Scope of Awards	12
3.5 The Proposal's Budget	12
3.6 Funding Contracts and Consortium Agreement	13
<b>4 Program Progress and Review</b>	<b>13</b>
4.1 Semi-Annual (Periodic) Review	13
4.2 Annual Review	14
<b>5 Proposal Selection Criteria</b>	<b>14</b>
5.1 General	14
5.2 Criterion #1: Scientific and Technological Merit, Innovation, and Impact (50%)	14
5.3 Criterion #2: Work Packages and Team (35%)	15
5.4 Criterion #3: Collaboration (15%)	16
<b>6 The EC Proposal Application Process and Timetable</b>	<b>16</b>
6.1 Step 1: Introduction of Potential Program to the EC	16
6.2 Step 2: Preparation and Submittal of the Full Proposal	18
6.3 Step 3: BIRD's Site Visit to the U.S. and IL Leads	18
6.4 Step 4: Proposal Review and Evaluation by the DOE and MOE / IIA Reviewers	19
6.5 Step 5: Decision on the Proposal by the EC's Executive / Selection Committee	19
6.6 Step 6: Financial Status and Funding Resources Clearances	20
6.7 Step 7: Consortium Members Agreement (CMA)	20

6.8	Step 8: Preparation / Signing of the ECFA's; Extension of First Grant Award Payment	21
<b>7</b>	<b>Proposal Preparation Guidelines</b>	<b>22</b>
7.1	Introduction	22
7.2	The Proposal Structure and Contents	22
7.3	Section A: Proposal Cover Page	23
7.4	Section B: Table of Contents	24
7.5	Section C: Executive Summary	24
7.6	Section D: The Innovative Technology	27
7.7	Section E: Proposed R&D Program	28
7.8	Section F: Program Plan (GANTT)	32
7.9	Section G: The Market	33
7.10	Section H: Commercialization – Plans and Prospects	35
7.11	Section I: Cooperation, Economic and Social Benefits	35
7.12	Section J: Organization and Management Plan	35
7.13	Section K: The Consortium Members and Their Resources	36
7.14	Section L: The Budget	37
7.15	Section M: Risk Analysis	48
7.16	Section N: Sundry Information – Mandatory	50
<b>8</b>	<b>Procedures for Proposal Submissions and Grant Award Decisions</b>	<b>51</b>
8.1	Procedures and Guidelines for Proposal Submissions	51
8.2	Procedures and Guidelines for Grant Award Decisions	52
<b>9</b>	<b>Technical &amp; Fiscal Progress Reports</b>	<b>53</b>
9.1	General	53
9.2	Semi-Annual Technical Reports (TRs)	53
9.3	Fiscal Reports	61
9.4	Annual Presentation and Program Update	73
9.5	Supplementary / Supporting Files for TR and FR Preparation	74

-----

## **LIST of ACRONYMS and ABBREVIATIONS**

AI	Artificial Intelligence
AP	Annual Presentation
APB	Approved Program Budget
BIRD	(US-Israel) Bi-National Research & Development (Foundation)
CM	Consortium Member
CMA	Agreement / Contract between all Consortium Members
DOE	Department of Energy of the U.S.
EBW	Excel Budget Workbook
EC	U.S.-Israel Center of Excellence in Energy, Engineering and Water Technology (the Energy Center)
ECCP	Energy Center's Assigned Contact Person
ECEC	Energy Center Executive Committee
ECFA	Energy Center Funding Agreement
EGR/EOG	Enhanced Gas / Oil Recovery
ES	Executive Summary (of the Proposal)
FP	Full Proposal
FR	Fiscal Report
FRL	Consolidated Fiscal Report of the ILL or USL
FRM	Fiscal Report of a Consortium Member
G	Grant Award Payments
G&A	General and Administrative (Expenses)
GANTT	Generalized Activity Normalization Time-Table
IIA	Israel Innovation Authority
IL	Israel
ILB	Total Budget of all Israel Consortium Members
ILL	Israel Lead Consortium Member
IP	Intellectual Property
LNG	Liquified Natural Gas
M&Ds	Milestones and Deliverables
MOE	Ministry of Energy of the State of Israel
N	Number of (6 months) segments
ONG	Oil and Natural Gas
OT	Operational Technology
R&D	Research and Development
TR	Technical Report
U.S.	United States of America
USB	Total Budget of all U.S. Consortium Members
USL	U.S. Lead Consortium Member

# 1 Establishment Evolution, Impetus and Goals of the Energy Center

## 1.1 The Impetus for Establishment of the Energy Center

The Department of Energy of the United States of America (henceforth: "DOE") and the Ministry of Energy of the State of Israel (henceforth: "MOE") cooperate in the field of energy and water under a bilateral agreement signed in 2000 (hereinafter: the "Cooperation Agreement"), which was subsequently amended.

In 2016, the Israeli Government approved the expansion of the U.S. - Israel energy cooperation to be jointly funded and managed by the MOE and the Israel Innovation Authority (henceforth: "IIA"). The U.S. Consolidated Appropriations Act of 2018, which became law in March 2018, allocated \$4M for the U.S.-Israel Center of Excellence in Energy, Engineering and Water Technology (hereinafter: the **Energy Center or "EC"**), for the first year, with additional funding dependent upon Congressional Appropriations. An additional \$4M for 2019 has been allocated for the EC by the U.S. Congress. Israel has committed to allocating matching amounts on an annual basis. The private sector in both nations will also contribute a 50% cost share.

The U.S. Secretary of Energy, Rick Perry, and the Israeli Minister of Energy, Dr. Yuval Steinitz, signed an Implementation Agreement on June 25, 2018 to establish the EC, which aims to accelerate development and deployment of critical and innovative technologies for natural gas, cyber and physical security of energy infrastructure, the energy-water nexus, energy storage, and other areas of energy that are needed to diversify energy supply and promote higher efficiency.

## 1.2 The Goal of the Energy Center

The **goal** of the EC is to promote energy security and economic development through the research and development (R&D) of innovative energy technologies, while facilitating cooperation between U.S. and Israeli companies, research institutes and universities.

The EC will facilitate joint R&D on energy areas by teams of scientists and engineers from the U.S. and Israel and related joint activities in energy R&D. Initial priority areas to be addressed are specifically defined in Section 2.

# 2 Topic Areas of Research Priorities

## 2.1 Introduction

The 4 research topics of priority to be addressed by the proposing consortia are:

1. Fossil energy; Awarded
2. Energy storage; Awarded
3. **Energy cyber and physical security in critical infrastructure;**
4. Energy-water nexus. Awarded

Related joint efforts shall focus on, but not be limited to:

- Development, validation and optimization of functionality, durability and cost-effectiveness of new methods and technologies;
- Resource, infrastructure and economic analysis to inform investment decisions, operational strategies and action plans;
- Development and implementation of decision support tools for use by government decision-makers, business and technical partners and other stakeholders; and
- Sharing best practices by facilitating: (a) access to R&D infrastructure, (b) technology transfer practices from academic institutions and National Laboratories for application by industry in the United States and Israel, (c) workforce training and educational programs, and (d) student and postdoctoral exchange.

## **2.2 Topic Area #1: Fossil Energy - Awarded**

### **2.2.1 Cross-Cutting Research**

- Research includes work in advanced materials, computational science / big data learning and advanced analytical tools, with particular attention to high pressure / high temperature applications.
- Research consists of economically feasible and reliable multi-sensing sensors, capable of detecting temperature, gas species and pressure that - with additional development and scale-up by industry – could, ultimately, be capable of providing real-time measurements critical to the operation, optimization, reliability and efficiency of the next-generation of fossil fueled power systems.

### **2.2.2 LNG Optimization and Safety**

- Analyze and develop technical solutions that will enhance the development of liquefied natural gas (LNG) export and import operations. Research will chiefly focus on: (1) Enabling the feasibility and optimization of LNG technologies, efficient operational processes and reliable transportation methods (i.e., LNG transport by rail) and (2) Identification and mitigation of the safety risks associated with LNG operations.
- Additional research could focus on development of small and / or mid-scale LNG projects that could be developed and deployed without extensive onshore infrastructure development.

### **2.2.3 Basin-Specific Research Strategies / Subsurface Science**

- Increase ultimate recovery – i.e., fundamental shale science, understand reservoir behavior, develop / utilize next generational enhanced recovery methods for oil and gas, including EOR / EGR (i.e., CO<sub>2</sub>-EOR); permeability manipulation; resource characterization, improve wellbore integrity; well stimulation techniques and advanced modeling of geophysical and geochemical signals in the subsurface.
- Increase long term operational and recovery efficiency of oil and gas resources through field research and / or field observatories and/or test sites in varying basins to capture data before, during, and after operations.

#### **2.2.4 Offshore Safety and Risk Mitigation**

- Focused specifically on oil spill prevention through maintenance of well-control during drilling and production operations.
- Identify offshore sub-surface geologic hazards.
- Optimize drilling and completions – i.e., minimize the impacts of metocean effects on surface and sub-sea infrastructure, reduce vulnerabilities of offshore surface facilities.
- Increase reliability of sub-sea processing systems – i.e., advance sub-sea monitoring and surveillance systems, increase reliability of sub-sea processing systems.
- Improve surface systems and umbilicals – i.e., improve intelligent well-control systems and equipment, minimize and mitigate risks of deep-water flow assurance, rapid detection and in-situ characterization (detecting kick at the drill bit).

#### **2.2.5 Transportation and Storage**

- Expand applicability of pipeline inspection & repair.
- Develop smart sensors for pipeline operational efficiency.
- Accelerate advanced materials research.
- Enhance leak detection & monitoring – i.e., for underground gas storage facilities, compressors and remote sensing of super-emitters.

#### **2.2.6 Eliminate Produced Water Disposal / Water Quality and Availability**

- Water constituent characterization (water quality).
- Optimize use of water treatment and water management technologies – water treatment technologies deployed at the well-pad or basin (i.e., membranes), development of water data management tools, reducing freshwater use and increasing wastewater use, beneficial use & reuse of produced / flowback water (i.e., for irrigation).
- Enhance well-bore integrity.

### **2.3 Topic Area #2: Energy Storage - Awarded**

#### **2.3.1 Innovative Technologies**

Developing new energy storage technologies that increase capacity, lengthen storage time, reduce system cost and lower installed cost, improve round-trip efficiency and improve lifetime.

#### **2.3.2 Energy Storage Analysis**

Developing or improving existing tools that identify where energy storage can be most beneficial to the power system. The tools should consider:

- The variety of services energy storage can provide to the grid, and their impact on both the transmission and distribution systems;
- A variety of important time scales (e.g. seconds, minutes, hours, days);

- Cost or potential future cost savings as a result of storage implementation programs in cities, regions, or countries;
- Using energy storage to support operational resilience.

### **2.3.3 Energy Storage and Management Hybrid Systems**

Applicants should consider developing optimization algorithms for energy storage that can minimize cost and optimize value when used on the power system in combination with:

- Photovoltaic systems
- Electric vehicle charging
- Residential or commercial buildings
- Electricity grid
- Virtual energy power
- Cloud-based control of pool of distributed energy resources

Selected applications will develop technologies that are interoperable, scalable, and readily manageable. They will include a strategy for transitioning solutions into practice throughout the energy sector through commercialization or by making the solution available through open source, where applicable.

## **2.4 Topic Area #3: Development of Tools and Technology for Energy Cyber and Cyber-Physical Security in Critical Infrastructure**

Applicant submissions must include plans for the development and / or demonstration of newly developed cybersecurity technology or tool at a relevant end-user site, to validate a clear path to industry acceptance. Selected applications will involve advanced tools / technologies that are interoperable, scalable, and readily manageable. They will also include a strategy for transitioning solutions into practice throughout the energy sector through commercialization, or by making the solution available through open source.

### **2.4.1 Development of Tools and Technology**

Proposals must describe R&D to deliver game-changing tools and technologies that help companies secure today's energy infrastructure from advanced cyber threats. Design next-generation future systems that are built from the start to collectively cooperate and interoperate, in order to automatically detect, identify, reject, and withstand cyber incidents, regardless of the threat. Pursue enhancements to the reliability, survivability and resiliency of energy infrastructure, while addressing the relevant regulatory groundwork (e.g. concerning privacy etc.). All solutions must support current logging standards, ready to feed Big Data and Machine Learning-based analytics systems. Subtopics may include:

- Cyber-secure, cloud-based technologies for Operation Technology (OT) environment to facilitate threat sharing and automated defenses throughout the energy sector;
- Innovative technologies that enhance cybersecurity of OT environments in the energy sector through automated detection, identification and mitigation of cyber threats;



- Redesign for cyber-resilient architecture for the energy sector, providing the ability for systems to interoperate, communicate and cooperate, in order to continue to operate in their designed capacity before, during and after a cyber-incident;
- Ways and methods of accelerating the training phase and increase the accuracy of anomaly detection systems, by using open-source knowledge of OT environments and architecture;
- Adversarial Artificial Intelligence (AI) mitigation in Energy related systems;
- Utilizing 5G for a secure E2E implementation;
- Next Generation PLC cybersecurity;
- Secured edge Computing in the Energy Sector;
- Viable deception implementation in the Energy Sector;
- Time / Clock / GPS spoofing protection.

#### **2.4.2 Use of Tools and Technology**

Strengthen the energy sector's cybersecurity posture by leveraging and demonstrating already developed and vetted tools, guidelines, outreach, training and technical assistance in novel and improved ways, including the utilization of novel simulators.

#### **2.4.3 Cyber Emergency Preparedness and Response**

Pursue enhancements to the reliability, survivability and resiliency of energy infrastructure.

Facilitate faster recovery from disruptions to energy supply, including management and oversight of petroleum reserves.

### **2.5 Topic Area #4: Energy Water Nexus - Awarded**

Historically, water infrastructure has been made up of systems that were designed independently to treat and convey particular water resources for a particular use. The vision for energy-smart water infrastructure is to flexibly match water supply and demand across a variety of uses and achieve efficient and productive use of water and energy resources through integrated, data-informed operations.

Proposals must feature 3-5 testbeds that take advantage of existing infrastructure. The testbeds must include sensor system design, infrastructure system configuration, and supporting data analytics for monitoring, control, diagnostics and management. At least one testbed must be in the U.S. and one in Israel. For each testbed, applicants must clearly describe an energy-water problem or issue to be addressed, with a desired outcome; the hardware configuration (including existing infrastructure and added sensors, devices, and equipment); a plan for data collection, management, quality control and analytics; and a plan to test the system.

Across testbeds, possible energy-water target outcomes include but are not limited to: reduction in system losses of water and embedded energy, increased energy efficiency through process control and / or pumping optimization, reduced energy cost and/or operational resilience through flexible operations, energy recovery and water reuse optimization, energy-efficient regional water resource management, and water use optimization in energy systems.

Collected data sets will be shared with MOE / IIA, DOE and the public.

Energy-water domains of interest for the testbeds include:

- Drinking water
- Municipal wastewater
- Seawater and / or brackish water desalination
- Oil and gas operations
- Thermoelectric power plant operation

See Table 1 for more details on areas of potential interest for sensing and analysis. Note that the outlined areas are for illustrative purposes. Applicants are not limited to the contents of the table. Testbeds could also include multiple domains, such as delivery of treated municipal wastewater to a thermoelectric power plant for cooling.

	Water Attributes to be Measured	Complementary Data / Information	Targets for Diagnostics, Analytics and Control
<b>Drinking water</b>	Flow, Pressure, Contaminant levels	<ul style="list-style-type: none"> <li>• Water resource levels and forecast</li> <li>• Water demand and forecast</li> <li>• Quality requirements</li> <li>• Electricity market conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Leak detection</li> <li>• Contaminant monitoring and process response</li> <li>• Flexible electricity demand</li> </ul>
<b>Municipal wastewater</b>	Flow, Pressure, Nutrient concentration (N, P, K), Contaminant levels	<ul style="list-style-type: none"> <li>• Water re-use quality requirements</li> <li>• Energy recovery rate</li> <li>• Pathogen risks</li> <li>• Electricity market conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Leak detection</li> <li>• Energy efficient plant operation</li> <li>• Flexible electricity demand</li> <li>• Flow control for water reuse</li> </ul>
<b>Desalination</b>	Flow, Pressure, Salinity, Contaminant levels	<ul style="list-style-type: none"> <li>• Water quality requirements</li> <li>• Electricity market conditions</li> <li>• Demand level</li> </ul>	<ul style="list-style-type: none"> <li>• Flexible electricity demand</li> <li>• Energy efficient plant operation</li> </ul>
<b>Oil and gas operations</b>	Flow, Pressure, Salinity, Contaminant Levels	Treated water quality requirements	<ul style="list-style-type: none"> <li>• Water efficient operations</li> <li>• Energy efficient water treatment</li> </ul>
<b>Thermoelectric power plant</b>	Flow, Pressure, Contaminant Levels, Temperature	<ul style="list-style-type: none"> <li>• Plant operating constraints</li> <li>• Plant operating condition</li> <li>• Environmental constraints</li> </ul>	<ul style="list-style-type: none"> <li>• Total water use</li> <li>• Blowdown timing</li> <li>• Thermal management</li> </ul>

Table 1: Illustrative Sensing and Analytical Needs for Water Infrastructure

## 3 Grant Awards Model of the Energy Center

### 3.1 Overview

Any **two** or more entities from **each** country, registered in Israel or in the U.S., may jointly apply for financial support from the EC, as long as they have the combined capability and infrastructure to develop an innovative product and / or technology by conducting R&D activities as described in Section 2.1, above, referred to as "the **Program**". The partnering entities are collectively referred to as "the **Consortium**". One key criterion is that each Consortium Member (henceforth: "**CM**") has the demonstrated ability to carry out its part of the Technology's joint development

program, referred to as "the **Proposal**". The Proposal will present the joint R&D activities of the U.S.-Israel Consortium and their cost, referred to as the Proposal's "**Budget**".

### 3.2 The Award Applicants – A Consortium

- A **proposal** should be submitted by a U.S. - Israel **Consortium** of at least two (2) entities from each country, including commercial companies and / or research institutes and / or universities (the Israel participants must include at least one commercial company).
- The Consortium must have one (1) **U.S. Lead** (henceforth: "**USL**") and one (1) **Israel Lead** (henceforth: "**ILL**"), which may be a research institution or a commercial company.
- The ILL / USL will be responsible to the Consortium and to the EC for the management and reporting of both the technical and fiscal (the Budget) activities of their CMs, accordingly.
- A given Consortium may submit **only one (1) Proposal** per the research topic area.
- The CMs all agree **to share risk** involvement in the Proposal and rewards. The nature of the business relationship between the CMs is that of **sharing** - both in the technology's development program (the Proposal) and in the revenues derived from its subsequent commercialization.
- If applicable, at least one of the CMs should possess **intellectual property rights** to the Technologies being developed;
- The ILL / USL have responsibility for **managing sub-contractual arrangements** with CMs from their respective countries.
- Changes in Consortium membership require prior approval by the EC.

### 3.3 Proposal Characteristics

- The Proposal should be based on **close R&D collaboration** between the U.S. and Israeli entities;
- The Proposal should include **novel** concepts, products and / or Technologies;
- The Proposal should show how the proposed activities provide potential for **accelerating development, technology transfer** and **deployment** of advanced Technologies in the areas of interest. Preferably, the Proposal should lead to **demonstration or implementation of the Technologies / activities** in relevant environments;
- The Proposal's **effective date** (start date) may be as early as the 1<sup>st</sup> day of the month following the approval of the Proposal by the EC. Proposal duration may be as long as **5 years**, if deemed necessary for reaching significant Technological advancement / achievements (see section 3.4, below).
- The Proposal **may include** activities such as workforce training, student and postdoctoral exchange, as stated in Section 2.1, above;
- The Proposal should include **detailed provisions for conducting and managing** the cooperation, and shall cover such matters as technical scope, work plan, staffing requirements, funding sources and Budget, protection and allocation of intellectual property, exchange of proprietary information, and any undertakings, obligations or conditions necessary to the proposed activity;

### 3.4 Funding Sources and Scope of Awards

- The Energy Center (EC) is funded by the **DOE** and the **MOE**, jointly with the Israel Innovation Authority (**IIA**) and managed by the U.S. - Israel Binational Research and Development Foundation (**BIRD**), **acting** as the EC **Secretariat**.
- The EC will participate in the Program's development cost (the Proposal Budget, described in Section 3.5, below) with the Consortium, by funding **up to 50%** of the **consolidated** (total) **Budgets** of all U.S. CMs (henceforth: "**USB**") and the consolidated (total) **Budgets** of all Israel CMs (henceforth: "**ILB**"), referred to as the "**Award**";
- Dependent on satisfactory performance and progress of the proposal's execution, the Award will be extended separately to the ILL and USL on a **semi-annual basis**, who will distribute them among the CMs under their management, based on the **Consortium Agreement / Contract** between all CMs (henceforth: "**CMA**").
- For Topic Areas #1, #2 and #4, the maximum award for a single Consortium is **\$10M** (planned minimum: \$8M) **for a period of 5 years** (\$2M per year per Consortium), subject to the availability of funding. The grant will be divided between the USL and the ILL according to their respective workshares (see Section 3.5, below), to be **further distributed** between their respective CMs.
- The awarded Consortium in Topic Area #3 will receive up to a **three (3) years award** (the Program may be extended for up to two (2) additional years, for a total of 5 years), subject to funding availability and performance of the awardees, which will be reported semi-annually and reviewed annually;
- The maximum award for a consortium in **topic area #3** is **\$6M** for a period of **3 years**, subject to appropriations / funding allocation and performance. Proposals should include cost-sharing of **at least 50%** (That is, proposals submitted by each Consortium should include a budget of at least **\$12M over 3 years**.) Hence, the initial award value for each consortium will be up to **\$2M** for the first year and up to **50%** of the approved first year Budget, and a maximum total award of \$10M if it is extended to a 5 year period), based on appropriations / funding allocation and performance. The grant will be divided between the USL and the ILL according to their respective workshares (see Section 3.5, below), to be **further distributed** between their respective CMs.

### 3.5 The Proposal's Budget

- The Proposal **Budget** is estimated by the Consortium and is submitted as part of the Proposal in the application process. It should include all development expenses to be incurred during the course of the Program that the Consortium wants to be included in the Proposal, including direct labor and its associated overhead, materials, subcontractors, consultants, travel and depreciation on new or used equipment employed.
- The **USB** and **ILB** (see Section 3.4, above) will be presented in the Full Proposal, covering the **entire duration** of the Proposal (maximum 3 years for Topic Area #3). In addition, each CM will include its Proposal Budget in the Full Proposal. The USB and ILB will be managed throughout the Proposal execution by the USL and the ILL, respectively, including the reporting to the EC of the budgets' status vs. actual expenditures.
- For Topic Areas #1, #2 and #4, to receive the **maximum award**, the minimum approved Proposal Budget of the Consortium (USB+ILB) for a period of 5 years will be **\$20M** (\$4M per year). This budget will include the **maximum \$2M annual award** to the Consortium plus the minimum 50% cost share.

- To receive the **maximum award** for Topic Area #3, the minimum approved Proposal Budget of the Consortium (USB+ILB) for a period of 3 years will be **\$12M (\$4M per year)**. This budget will include the **maximum \$2M annual award** to the Consortium plus the minimum 50% cost share.
- **Cost share:** The USB should include the minimum 50% cost share from the U.S. CMs, **in aggregate**. The ILB should include the minimum 50% cost share of the Israel CMs, **in aggregate**.
- All CMs should contribute and share their technological expertise and intellectual property in execution of the joint Proposal. The task assignments should be divided in such a way that the relative workshare is expected to be approximately 50% / 50% between all the U.S. and all the Israel awardees, accordingly. Well justified exceptions will be considered, but no deviations more than 60% / 40%. Thus, neither the U.S. nor Israel CMs portion in the total Consortium Proposal Budget (USB +ILB) should be less than **40%**.

### 3.6 Funding Contracts and Consortium Agreement

- The BIRD Foundation, as the EC Secretariat, will **negotiate and sign** separate **funding contracts / agreements** (henceforth: "ECFA") with the U.S. Lead Awardee (USL) and with the Israeli Lead Awardee (ILL).
- The approved USB and ILB will include an **Overhead Allowance** of 2.5% of the Budgets, to reflect the cost of the management role of the USL / ILL. This Overhead Allowance is on top of the (usually) 25% Labor Overhead Allowance and the (usually) 5% General & Administrative (G&A) Expenses Allowance that is included in the Budget of each CM.
- The ECFA will include substantive milestones, budget, reporting and other requirements, as well as payments due to the Consortium by the EC.
- The EC will **monitor the progress** of the Consortium awardees, consistent with the contracts.
- A **Consortium Agreement / Contract** between all CMs (henceforth: "**CMA**") needs to be defined, signed and submitted to the EC for review prior to signing of the ECFA. This agreement is not an EC document and the BIRD Foundation is not a party to this agreement. The CMA should address issues relating to the development Proposal Tasks and responsibilities of each CM, to the Tasks execution timetable, to the periodic technical and fiscal (expenses) reporting to the EC, to the intellectual property ownership of the developed Program, etc.

## 4 Program Progress and Review

### 4.1 Semi-Annual (Periodic) Review

- The Consortium will submit to the EC one **semi-annual Technical Report (TR)**, covering the R&D progress made since the last report relative to the most updated approved Program plan.
- The USL and the ILL will each submit to the EC a separate semi-annual Fiscal Report (FR), covering the cumulative actual Program expenditures compared to the updated approved USL / ILL Budgets.
- The formats of the technical and fiscal reports are described in Section 9, ahead.

- The amount of the next periodic **grant payment** extended by the EC to the USL / ILL will be based on the semi-annual TR and FR.

## 4.2 Annual Review

- In addition to the reports mentioned in Section 4.1, each Consortium will submit to the EC an **Annual** Technical and Fiscal Summary Report / Presentation (AR) This report / presentation will be due each year within 7 weeks from the end date of the 2<sup>nd</sup> semi-annual reporting period.
- With the Summary Report / Presentation, the Consortium will submit an updated ILL / USL Budget Proposal and GANTT for the following 2 years.
- The EC Executive Committee (henceforth: "**ECEC**") will review the Annual Summary Report during its annual meeting and will decide whether to accept the Report and the updated ILL / USL Budgets and GANTT.
- The ECEC may discontinue the Award at any time if it will be dissatisfied with the performance of the Consortium.
- Changes in Consortium membership require prior approval of the ECEC. A request for Consortium membership change should be submitted as soon as possible, preferably during the annual reporting process.

## 5 Proposal Selection Criteria

Proposals are evaluated based on consideration of the following factors. All sub-criteria are of varying weights.

### 5.1 General

The selection criteria are comprised of the following 4 components:

- Scientific and technical merit;
- Technical approach, management plan, and understanding of project objectives; (Preference is given to proposals with sound plans for leading to technology transfer from academia to industry and moving technology to market.)
- Applicant / team capabilities, experience, organization, facilities and management capabilities;
- Program policy factors, such as level of U.S.-Israel cooperation and presented synergy.

### 5.2 Criterion #1: Scientific and Technological Merit, Innovation, and Impact (50%)

#### 5.2.1 Technological Merit and Innovation

- Extent to which the proposed program is innovative and has the potential to advance the state of the art; Awareness of commercial and emerging technologies and processes, in case relevant;

- Soundness of the concept; and
- Clarity and persuasiveness of the presentation and ideas including prior art, data, and analysis.

### **5.2.2 Impact of Technology Advancement**

- How the projects support the topic area objectives, and their impact on the relevant market within the area objectives;
- Extent to which the plan can contribute to bridging knowledge gaps in both countries; and
- Extent to which the plan contributes to the establishment of strong knowledge centers;

## **5.3 Criterion #2: Work Packages and Team (35%)**

### **5.3.1 Research Approach and Work Plan**

- Degree to which the problem statement, approach and critical path have been clearly described and thoughtfully considered;
- Degree to which the tasks are coherent, effective, timely, appropriately allocated and well balanced between the parties, resulting in a high likelihood that the proposed work plan will succeed in meeting the project goals; Degree to which the tasks descriptions are clear and detailed;
- Potential of the knowhow transfer from academy to industry;
- Degree to which the proposed activities lead to demonstration of the technologies in relevant environments, and can be later scaled and implemented, when relevant;
- Appropriateness of the management structure and procedures (e.g., for monitoring and controlling project scope, cost and schedule);
- Reasonableness of budgets and spend plan for proposed project and objectives.

### **5.3.2 Identification of Technical Risks**

Discussion and demonstrated understanding of the key technical, process and commercialization risk areas involved in the proposed work and the quality of the mitigation strategies to address them, in case relevant.

### **5.3.3 Baseline, Metrics, and Deliverables**

- The level of clarity in the definition of the baseline, metrics and milestones and their relevance;
- Relative to a clearly defined baseline, the strength of the quantifiable metrics, milestones and mid-point deliverables defined in the application, such that meaningful interim progress can be demonstrated.

### **5.3.4 Commercialization (when relevant)**

- Identification of target market, competitors and distribution channels for proposed Program, along with known or perceived barriers to market penetration;

- Initial commercialization plan, including identification of potential paths towards commercial deployment.

### 5.3.5 Team

- The capability of the consortium and the proposed team to address all aspects of the proposed work with a good chance of success. Qualifications, relevant expertise and time commitment of the individuals on the team;
- Plan for the management team to technically integrate the various components of the work and adapt in response to successes and setbacks;
- The sufficiency of the facilities to support the work;
- Degree to which the proposed consortium demonstrates the ability to facilitate and expedite further development and commercial deployment of the proposed technologies;
- Degree to which the proposed consortium management demonstrates effective coordination and communication between the project team members and other project participants, including technical, business, financial, and other parties; Including prior experience in managing projects of similar type, size, and complexity.

## 5.4 Criterion #3: Collaboration (15%)

- Extent to which the plan encourages collaboration and demonstrates synergies between the U.S. and Israel Consortium members;
- Extent to which the plan encourages collaboration in mutual access to R&D infrastructure, including for the industrial development of technology, knowledge as well as student and post-doctoral exchange;
- How the plan supports cooperation in the development of human resources with expertise in applications of innovative technologies and their industrial applications;
- Added value of the consortium compared with independent research of the parties (complementarity of the participants within the consortium). Researchers plans to leverage the experience and expertise of other organizations in the consortium.

## 6 The EC Proposal Application Process and Timetable

Following is a description of the EC Proposal application process and timetable.

### 6.1 Step 1: Introduction of Potential Program to the EC

BIRD strongly recommends to Israeli and U.S. companies that are considering applying for funding from the EC with respective U.S. and / or Israeli partners, to introduce their company or organization to a BIRD Foundation's representative, their innovative Technology, and their intention to submit a Proposal to the EC as part of a Consortium. An **introductory meeting**, which can be held even before all the Consortium participants have been identified or recruited, can assist the companies / organizations to better understand the EC's criteria for Consortium qualification, innovative Technologies considered for development, suitable partnering relationships, and characteristics of the planned Proposal considered for submittal.



**Note:** Based on the accumulated experience by the BIRD staff, it is estimated that at least **8 weeks** are required to prepare a comprehensive Full Proposal.

Typically, either the planned U.S. Lead (USL) or Israel Lead (ILL) will initially approach BIRD for the Proposal's funding support. Ideally, the ILL should contact a staff member at BIRD's Israel headquarters, and the planned USL should approach its regional U.S. BIRD representative. It is recommended that the ILL or the USL be represented by at least one Executive who is familiar with both the technical and business (commercial) aspects of the proposed Proposal.

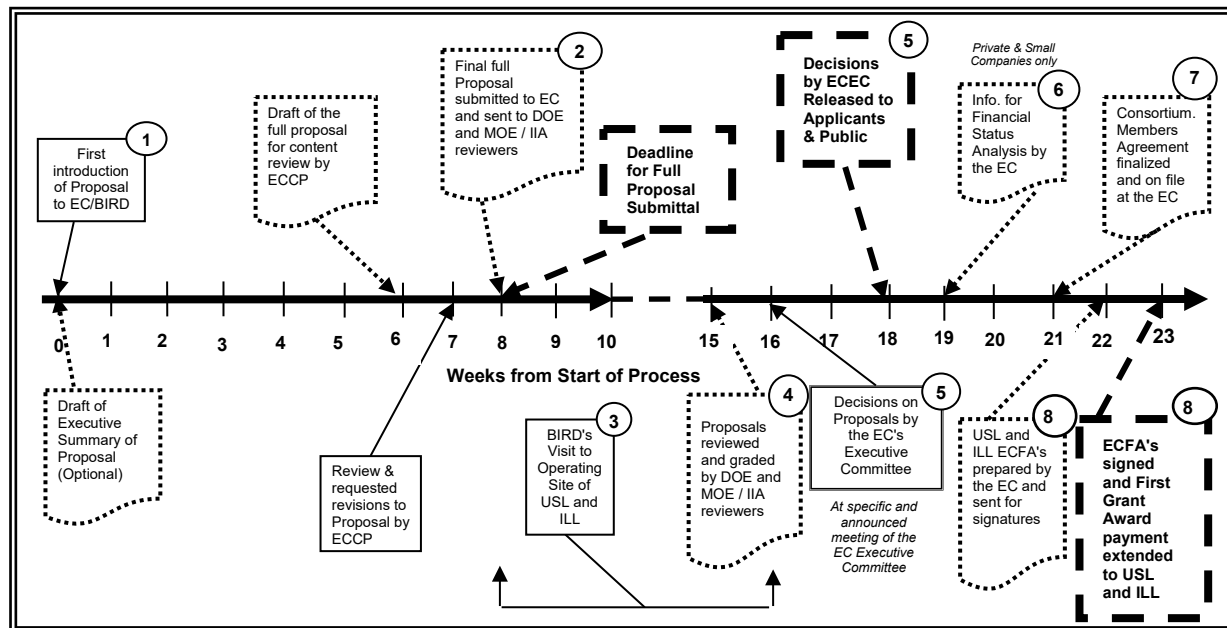


Fig. 1: Flowchart of the 8 steps in the EC Proposal application process and timetable (Note: the timetable is subject to change)

When both the ILL and USL of the planned Consortium have been identified and the general scope of their joint Proposal has been defined, the issues and topics that are typically discussed at the introductory meeting are:

- **Company / Organization Background:** Technical, commercial and financial assets, as well as the relevant strengths of each company / organization in the Consortium for the successful completion and commercialization of the proposed development Program. These include the characteristics and qualities possessed by each company that would make it a good development partner to the Consortium.
- **The Innovation:** Description of the Program to be developed, including its uniqueness, innovation and the solution it provides for current, unmet market and/or social needs.
- **Proposed Plan:** Description of the proposed activities to achieve the objectives of the Program, including potential transfer of Technology from academia to industry, demonstration of technologies in relevant environments and other activities.
- **The Proposal Scope:** An estimate of the approximate total development Budget for both the Israel and the U.S. portion of the Proposal tasks throughout the (maximum) 5 years duration of the Proposal.
- **Collaborative Relationship:** Description of the anticipated role of each participant in the Consortium during project development and commercialization. This should include division

of the development Budget between the Consortium participants, non-EC financing sources for project expenses and the arrangement between the participants regarding any revenue / profit sharing and other benefits expected to be derived from subsequent commercialization.

- **Commercial Potential:** Description of the estimated market size and growth rate for the products to be derived from the developed Program, by main applications, of the current and expected future competitive technologies, and of the potential routes to market entry.

It is recommended, though it is not essential, that prior to the introductory meeting, the representative participants submit to the EC a draft of the Executive Summary of the Proposal (see Section 7.5, ahead), which, in essence, relates to the same 6 issues listed above.

Note: *The Executive Summary template can be downloaded from the EC website (File #1 in <https://us-isr-energycenter.org/guidelines-forms/>)*

At the introductory meeting, the BIRD representative will acquaint or update the Consortium representatives with the EC application procedures and timetables, as well as with the grant payment procedures, as requested.

## 6.2 Step 2: Preparation and Submittal of the Full Proposal

The Consortium participants will jointly prepare a **Full Proposal** document (henceforth: "FP"), following the detailed instructions given in Section 7, below.

There is a **formal deadline** in the Proposal application process. The upload system will close on the deadline date specified on the EC website. In order to ensure that a Proposal be approved at the scheduled meeting of the EC's Executive Committee (ECEC) (see Step 5, below), the Proposal needs to be submitted prior to the specified deadline. Furthermore, failing to comply with all the instructions and requirements set forth for the preparation of the Proposal will cause the **rejection of the Proposal** and it will not be considered a candidate for the EC support.

Optional but **strongly recommended**, a draft of the proposal may be pre-reviewed by the EC's assigned **Contact Person** (henceforth: "ECCP"), to ensure adherence to the EC's Proposal Preparation Guidelines, including completeness, clarity and consistency of its contents. The draft Proposal must be submitted using the EC's Upload System (<https://ec-upload.birdf.com>).

After incorporating all changes and enhancements recommended by the ECCP, the Consortium must upload the final proposal to the EC's Upload System. A hard (unbound) copy must be sent to the EC's headquarters in Israel, where it will be filed.

The FP is sent by the EC, as is, to both the DOE and MOE / IIA **professional reviewers** for a thorough review (see step 4, below).

Note: *The Full Proposal template can be downloaded from the EC website (File #2 in <https://us-isr-energycenter.org/guidelines-forms/>)*

## 6.3 Step 3: BIRD's Site Visit to the U.S. and IL Leads

It is intended (not mandatory) that a BIRD representative, acting on behalf of the EC, will meet with relevant management and with key technical and business executives from both the USL and the ILL participating in the Consortium who are familiar with the submitted Proposal.

The purpose of the meeting is to introduce (1) to the Proposal's details, (2) to the other IL or U.S. Consortium participants and their role in the Proposal, (3) to the USL / ILL relevant personnel, and (3) to answer questions the USL / ILL might have regarding the EC's assistance model, procedures and timetable. It also provides BIRD the opportunity to better understand the

USL/ILL capabilities and commitment to the Proposal, as well as its role in the development and commercialization of the Proposal.

## **6.4 Step 4: Proposal Review and Evaluation by the DOE and MOE / IIA Reviewers**

Both the assigned **Professional / Technical Reviewers** from the Israel Ministry of Energy (MOE) and the Israel Innovation Authority (IIA), who may be two different Reviewers, and the Reviewers from the U.S. (may be multiple merit Reviewers from various U.S. agencies; see Step 2, above), will receive a copy of the Full Proposal (FP) for review and evaluation. The Reviewers are independent professionals with specific technological background relevant to the reviewed Proposal.

### **6.4.1 The Review by the MOE / IIA**

The Reviewers from the MOE / IIA may contact the ILL and schedule a meeting (not mandatory). The Reviewer(s) will advise the ILL what background material / presentation should be prepared by the ILL for presentation during the visit.

### **6.4.2 The Review by the DOE**

The DOE-assigned merit reviewers will base the review and evaluation **solely on the FP**. Thus, the reviewer might request to **clarify and expand on topics not sufficiently covered in the FP**, or to relate to comments raised by the reviewer. This request will be conveyed to the USL / ILL in writing by BIRD. The USL / ILL will be asked to promptly respond in writing to the specific questions / comments.

### **6.4.3 The Evaluation of the Proposal by the Reviewers**

Both the DOE and the MOE / IIA will submit to the EC Executive (Selection) Committee (**ECEC**) the review summary and their recommended evaluation of the proposal. The Proposal's evaluation from the DOE and the MOE / IIA will be presented to the ECEC and will serve as supporting material for the ECEC in the Proposal approval process.

The Consortium participants will not receive the review summary and the evaluation of the Proposal by neither reviewers nor from the EC.

## **6.5 Step 5: Decision on the Proposal by the EC's Executive / Selection Committee**

The EC's Executive / Selection Committee (ECEC) will convene for a meeting (or several meeting sessions), at specified dates, to act upon all award applications that have successfully completed steps 1-4, above.

The ECEC is comprised of members from the DOE and from the MOE / IIA. The members of the ECEC or their acting designees are listed in the EC website. The ECEC includes two representatives of BIRD's Board of Governors (one U.S., one IL), in an advisory capacity.

The ECEC will act on the Proposals submitted by the various applying Consortia by making one of the following decisions for each Consortium:

1. **Approve** a Grant Award for a **specified sum** to the IL Consortium members and another Grant Award for a specified sum to the U.S. Consortium members (both totaling at most 50% of the Proposal's Budget);
2. **Not approve** a Grant Award to the applying Consortium.

The ECEC's decision will be conveyed in writing to both the USL and ILL of each applying Consortium **within four (4) weeks** after the ECEC meeting sessions.

If a Grant Award has been approved, the Consortium applicants, represented by the USL and ILL, will have up to **four (4) months** to materialize this approval by signing with the EC the **Energy Center Funding Agreement (ECFA)**, as described in Step 8, below.

## 6.6 Step 6: Financial Status and Funding Resources Clearances

If either the ILL or the USL is a relatively **young and small private company**, the EC will usually conduct a **short financial analysis** of the company, to determine the following:

1. Current (2020) tangible financial resources available to the company;
2. Financial ability of the organization to cover the expenses associated with its overall operation (and not only the expenses stemming from the EC-supported program) for a future period.

The financial analysis is based on a **short questionnaire** completed by the organization.

Should the organization **not** be able to substantiate item (2), above from the availability of current tangible financial resources (described in (1), above) within 3 months from the Grant Award announcement, the organization's owners will be asked to provide the EC with **financial assurances**. Failure to provide satisfactory assurance for item (2), above, may prevent the signing of the ECFA and payment of the EC grant award.

## 6.7 Step 7: Consortium Members Agreement (CMA)

The EC requires that, prior to the signing of the ECFA's (see Step 8, below), an agreement be in place between **all** the Israel and U.S. companies / organizations participating in the Consortium. A copy of this **Consortium Members Agreement** (henceforth: "**CMA**") should be submitted to the EC. Please note that, in so far as concerns the EC, in any instance in which a provision of the CMA contradicts a provision of any of the ECFA's, the provision in the ECFA shall prevail.

While the EC is not part of the CMA, nor is the EC involved in formulating and negotiating this agreement, at least the following topics should be addressed and covered in it. Agreement on these issues prior to initiation of the joint development **is critical** to maintaining the **cohesiveness of the affiliation** between the CMs throughout all phases of cooperation:

- The **ownership arrangement** between the CM of any of the **Intellectual Property (IP)** evolving from the jointly developed Program throughout the duration of the Proposal execution period;
- The **revenues and profit-sharing arrangement** between the CM for the jointly developed Program;
- The arrangement between the CM regarding preparation and timely submission of the **periodic TRs and FRs** to the EC throughout the development period of the Program;

- The arrangement between the CM regarding the distribution and forwarding of the **Grant Award payments** extended periodically by the EC to the ILL and to the USL.

Failure of the CM to agree on and to submit to the EC a CMA within 3 months from the Grant Award announcement will prevent the signing of the ECFA and payment of the EC grant award.

Note: *It should be understood by all CMs that, as the EC is not a party to the CMA, this agreement does not, in any way, affect any clauses in the ECFA's signed between BIRD, as EC Secretariat, and the USL / ILL.*

## 6.8 Step 8: Preparation / Signing of the ECFA's; Extension of First Grant Award Payment

### 6.8.1 Preparation of the ECFA's by the EC

BIRD, representing the EC, is responsible for the preparation of the **two (2) ECFA's** for each approved Consortium Proposal, which are signed by the USL or the ILL as one side (referred to in the ECFA's as "**the Proposer**") and BIRD on the other side.

The preparation of the ECFA's commence after the Proposal is approved by the ECEC (see Step 5, above). Although it is a **standard-form agreement**, it is customized to any specific Consortium based on information found in the FP (Step 2, above), including:

- The Effective Date (**Proposal start date**) of the agreement, taken from the Proposal cover page;
- The Program **duration** (taken from the Proposal cover page);
- The Program **title** (taken from the Proposal cover page);
- The Program **managers** from both the USL and ILL (taken from Section H of the FP);
- **Mailing and office addresses** of both companies (taken from the Proposal cover page);
- The **Program plan** (GANTT chart), which constitutes Annex D of the ECFA (taken from Section D of the FP);
- The **Budgets** of the IL and the U.S. CMs, which constitutes Annex A of the ECFA (taken from Section L of the FP).

Notes: (1) *If the approved Grant Award is less than 50% of the total Budget in the Proposal, the USL and ILL are asked to submit to the EC (in softcopy, as an Excel workbook) revised Budgets for the Israel and U.S. CMs, totaling **exactly twice** the amount of the approved Grant Award. The CMs are **free to select** which expense items in the Budgets are to be partially included or excluded completely in the revised Budgets, provided that the revised budget of the US side or the Israeli side is **not less than 40%** of the combined revised Budgets.*

(2) *The revisions of the Budgets do not, in any way, change the obligation of the CMs to carry out all the work as described in the FP.*

### 6.8.2 Signing the ECFA's by the USL and the ILL

The standard ECFA will be posted on BIRD's website.

Upon completion of the two ECFA's preparation by the EC / BIRD and execution of Steps 6 and 7 of the application process (see above), the EC will send 2 copies of each ECFA's to the ILL and USL for an authorized signature, respectively. Once signed, the ILL and USL will each return

the two copies to the EC / BIRD. After being signed by **BIRD's Executive Director** (representing the EC), a fully signed copy will be returned to the ILL and to the USL.

### 6.8.3 First Payment to the ILL and USL of the Consortium

The signing of the two ECFA's by the 2 parties to each agreement (the ILL and BIRD and the USL and BIRD, respectively) is a **pre-requisite** for transferring of the **first grant award payment** by the EC to both USL / ILL, which is an advance (down-payment).

Grant Award Payments (G) are made after receipt and approval of a joint technical report and a separate fiscal report, submitted by both the ILL and USL at the end of each one of (N) segments (every **6 months**). These reports cover the development progress and the actual expenses incurred during the segment. For the sake of cash flow planning, grantees can assume N+1 equal payments of  $\$G/(N+1)$  every 6 months, the first one extended immediately after the ECFA is signed by all parties.

All grant payments are an advance (down-payment) to cover expected expenses during the upcoming segment. It should be emphasized that the payments are subject to periodic audits, and the Consortium may have to refund overpayments to the EC.

## 7 Proposal Preparation Guidelines

### 7.1 Introduction

Discussions in meetings by the Consortium representatives with the BIRD staff (acting on behalf of the EC) about the participants, objectives, challenges, characteristics, expected duration and costs of the Proposal usually precede submission of a formal Proposal. The EC encourages and recommends that at least one such meeting be held prior to the engagement in the preparation of the Proposal. However, while impressions gained from these contacts are important, in the final analysis, the formal evaluations and decisions are based on the formal Proposal submitted by the Consortium. The following Proposal preparation guidelines are to be followed and adhered to.

**Note:** *The EC / BIRD's dealings with the Consortium are **treated confidentially**, both by the EC / BIRD staff and by the Professional Reviewers appointed by the DOE, the MOE and the IIA, the three organizations responsible for conducting such reviews (see the EC website for a typical Confidential Disclosure Agreement).*

The Consortium may submit to the EC (through the EC's on-line upload system) a **draft Proposal** prior to the submission of the final Proposal, to be reviewed by an EC Contact Person (ECCP). The purpose of ECCP's review is to ensure that the proposal is sufficiently detailed to enable the outside reviewers to perform a meaningful and critical evaluation of the proposed program. This "internal" review process, strongly encouraged and recommended by the EC, will be carried out promptly only if the Consortium submits the draft Proposal by a specified deadline, which is typically about 2 weeks prior to the **Proposal submission deadline**.

**Note:** *The Full Proposal (FP) template, containing some MS-WORD and Excel files required in the specific FP sections, can be downloaded from the EC website (File #2 in <https://us-isr-energycenter.org/guidelines-forms/>)*

### 7.2 The Proposal Structure and Contents

There are four parts to the Proposal, the contents of which are included in 14 sections (A-N):

1. **Research / Program description** and the innovation in the Program / concepts (Section D).
2. Description of Proposal **program execution** and the **cooperation** between the Consortium members (CMs) – proposed approach, tasks, milestones and deliverables (Section E); program plan in GANTT Chart format (Section F); cooperation between the CMs (Section I); project organization and management (Section J); the CMs and their resources (Section K); the Program's Budget (Section L) and the Proposal's risk analysis (Section M).
3. The **marketing and commercialization plan** and prospects (Sections G and H).
4. **Registration / contact** information – cover page (Section A), table of contents (Section B) and sundry information (Section N).

The EC expects the CMs to **fully comply** with the instructions, including provision of all the information requested, full compliance with the template and format, with section numbering / designation and section captions / titles.

The following is a detailed description of the required contents of each Proposal section:

### 7.3 Section A: Proposal Cover Page

The format and content of the Proposal cover page is given in Fig. 2, below. It should be the **1<sup>st</sup> page** in the Proposal and must be **signed** by an **authorized official** from both the ILL and the USL.

Note: *The Proposal Cover Page form is included in the downloadable FP template.*

Proposal Cover Page	
<b>To:</b> U.S. - Israel Center of Excellence in Energy, Engineering and Water Technology	
<b>From:</b> Israel Lead Organization: _____	
Office Address - _____ _____ _____	Mailing Address (if different from office address) - _____ _____ _____
Telephone No. _____	_____
<b>From:</b> U.S. Lead Organization: _____	
Office Address - _____ _____ _____	Mailing Address - (if different from office address) - _____ _____ _____
Telephone No. _____	_____
<b>Proposal Title:</b> _____ _____	
<b>Topic area of Research</b>	<input type="checkbox"/> Fossil Energy <input type="checkbox"/> Energy Storage <input type="checkbox"/> Energy Security <input type="checkbox"/> Energy-Water Nexus
<b>Program Duration:</b> ____ years + ____ months <b>Program Budget:</b> \$ _____ <sup>(1)</sup>	
<b>Submitted by:</b> <b>Israel Lead Organization</b> <b>U.S. Lead Organization</b> <b>Authorized Company Official</b> <b>Authorized Organization Official</b>	
Signature: _____	_____
Printed Name: _____	_____
Title: _____	_____
E-mail: _____	_____
Date Submitted: _____	_____
<b>Preferred date (month / year) for start of Proposal funding:</b> <sup>(2)</sup> _____	
<small><sup>(1)</sup> Program Budget – the total budget for all participants in the Consortium, for the entire duration of the Proposal program</small>	
<small><sup>(2)</sup> Preferred date for start of Proposal funding – Can only be 1<sup>st</sup> day of the month. Do not request a start date prior to the date of the final Proposal submission</small>	

Fig. 2: Format & Content of Proposal Cover Page

## 7.4 Section B: Table of Contents

The table of contents should include reference only to the main Proposal sections (A-N). The section numbering must be adhered to and the page number of each section specified.

## 7.5 Section C: Executive Summary

As in any detailed technical document, the Executive Summary (henceforth: "**ES**") should address all the major topics of the Proposal, as specified below. Since it is strongly



recommended that the ES section be no longer than **6 pages in length** (including the tables included below), special attention should be given to its concise and clear wording.

The ES should start with Table 2 , below, defining the topic area of research (only **one area** can be chosen), the Proposal title (name), the total Proposal Budget, and the total Proposal duration.

Note: The info in Table 2 should be exactly the same as in the Cover Page in Section A, above.

Topic area of research	<input type="checkbox"/> Fossil Energy <input type="checkbox"/> Energy Storage <input type="checkbox"/> Energy Security <input type="checkbox"/> Energy-Water Nexus
Proposal title	
Proposal total budget	\$ _____
Proposal duration	_____ years and _____ months

Table 2: Proposal Summary Table at top of the ES

Description	Israel Lead Organization (ILL)	U.S. Lead Organization (USL)
Full company / organization name (as appears on the Certificate of Incorporation)		
Registration # (ILL); Duns # (USL)		
Co. / org. location (state, country)		
Company / organization website		
Year established	_____	_____
Revenues in 2019 fiscal / calendar year (as applicable)	\$ _____ million	\$ _____ million
Total number of employees	_____	_____
Ownership (Public / Private)		
Relationship of the companies (ILL / USL)	<input type="checkbox"/> Parent / Subsidiary <input type="checkbox"/> Common Ownership	<input type="checkbox"/> No common relationship <input type="checkbox"/> Other

Table 3: Summary info of the Lead Company / Org. of the Consortium at the top of the ES

Description	Value
Reporting to / supervised by Lead Co. / Org. in:	<input type="checkbox"/> Israel <input type="checkbox"/> U.S.
Full company / organization name (as appears on the Certificate of Incorporation)	
Registration # (ILL); Duns # (USL)	
Co. / org. location (state, country)	
Company / organization website	
Year established	_____
Total number of employees	_____
Ownership (Public / Private)	

Table 4: Summary Info in the ES of Each Non-Lead Consortium Member

The ES should continue with Table 3, above, to be completely filled-out by the Israel Lead Organization (ILL) and the U.S. Lead Organization (USL) of the Consortium.

Directly below Table 3, the ES should continue with Table 4, to be filled out consecutively **by each one** of the remaining CMs.

Following the 3 Tables above, the ES should continue with a concise description of the following 6 main topics, following the guidelines below:

1. **Abstract:** A summary describing the Technological essence of the Proposal, the problem it is challenged to solve and its expected outcome, the CMs and their contribution and the eventual commercial potential. The abstract should be self-explanatory to someone who has no previous knowledge in the field.
2. **Lead Company / Organization Background:** Describe the major technical, marketing and financial assets and strong-points of each one of the two **Lead Companies / Organizations** (the ILL and the USL) that are relevant to the successful completion of the proposed Program. Describe the characteristics and qualities possessed by each company / organization that would make it a good development partner to the other company / organization. In addition, both the ILL and the USL should identify and describe the characteristics, resources and other added values and responsibilities of all other CMs under its management during the Program.
3. **The Innovation:** Provide a concise description of the Technology(ies) / Product(s) to be developed within the Proposal Program, including its uniqueness, its innovation, and their potential impact in the relevant markets.
4. **Proposed Plan:** Provide a concise description of the proposed activities to achieve the objectives of the program, including potential transfer of technology(ies) from academia to industry, demonstration of technologies in relevant environments and other activities.
5. **Collaborative Relationship:** Describe the anticipated role of each CM during the **development and commercialization** (when relevant) **phases** of the Proposal Program. Indicate how the development **Budget will be split** between the CMs by including and referring to Table 5 (see below), and from where the non-EC portion of the Program's expenses will be obtained. Describe the expected general basis and arrangement between the CMs regarding sharing of profits and other benefits during commercialization.

#	Name of Consortium Member	Israel Consortium Members		U.S. Consortium Members	
		Total Program Budget (K\$)	% of total Program Budget	Total Program Budget (K\$)	% of total Program Budget
1	Company A	7,000	35.0%		0.0%
2	Company B		0.0%	5,000	25.0%
3	Company C	2,000	10.0%		0.0%
4	Organization A		0.0%	3,000	15.0%
5	Organization B	3,000	15.0%		0.0%
6			0.0%		0.0%
7			0.0%		0.0%
8			0.0%		0.0%
		=====	=====	=====	=====
		12,000	60.0%	8,000	40.0%
	Total Program Budget (K\$)	20,000			

Table 5: Total Program Budget Split between Consortium Members (example)

- 6. Commercial Potential:** Describe the major commercial applications (when relevant) expected to be derived from the Program development, and the expected **year** in which commercial sales can be expected (the "time to market"). State the estimated relevant **market size** (in volume and value) at the year of first commercialization for the developed Program for 2-3 major and representative applications (products), and the expected market share after 3-5 years of commercialization. (Please indicate the sources employed in deriving this forecast). Use Table 6 (or similar), below, to estimate the **total volume and the total \$** value of **direct sales revenue** expected to result by beneficiaries from the developed Program over the first 5 years of commercialization.

Description	Calendar Year				
	2025	2026	2027	2028	2029
First calendar year of commercial sales	2025	2026	2027	2028	2029
Year of commercialization	1	2	3	4	5
Definition of units:	MWH				
Annual units sold (Units)	50,000	60,000	70,000	80,000	100,000
Cumulative units sold (Units)	50,000	110,000	180,000	260,000	360,000
Product price (\$/unit)	500.00	500.00	500.00	500.00	500.00
	=====	=====	=====	=====	=====
Annual product sales revenue (M\$)	25	30	35	40	50
Cumulative product sales revenue (M\$)	25	55	90	130	180

Table 6: Sales Revenue Estimate for 1<sup>st</sup> 5 Years of Commercialization (example)

Note: *The Executive Summary template can be downloaded from the EC website (File #1 in <https://us-isr-energycenter.org/guidelines-forms/>). It includes the forms of all 5 tables above (Table 2 to Table 6).*

## 7.6 Section D: The Innovative Technology

This section should address the following two main issues: How are things done in this area today? What is the current state-of-the-art for the target markets?

- What is the state-of-the-art? Is this a unique technology? Why do you believe it will be successful? How will the technology differ from those in the market today?
- What are the limitations of the current technologies in the market? This is your opportunity to elaborate on the shortcomings that exist in the proposed Program and product area as a prelude to the description of the innovation and how it overcomes these shortcomings. Current limitations could include: high cost, non-optimal performance, lack of attention to specific market segments, i.e., poor suitability to high- or low-end markets, size, compatibility, nonconformance to standards, etc.
- What is the technology / product concept? Sketches, diagrams and tables should be included to help describe the innovation. This description should clearly identify in which way the innovation overcomes current limitations.
- What is the patent situation, including background patents and the potential for new patents?
- Which regulatory and technical standards are relevant to the developed technology? Will the proposed Program meet current and / or emerging standards?

## 7.7 Section E: Proposed R&D Program

This section of the Proposal is to be organized in two parts: (1) Analysis of the Problem and (2) Proposed Approach:

### 7.7.1 Analysis of the Problem

The purpose of this sub-section is to establish a credible basis for the proposed program, with the intent of identifying specific problem areas. These are the problems or difficulties which need to be solved / overcome in order to achieve the Program objectives. For example, at the start of the EC Program, the CMs are at Position A, which relates to the current limitations previously highlighted in Section D of the Proposal. By the end of the Program, the Consortium expects to be at Position B. What specific problems must be solved or overcome in order for the Consortium to reach Position B, consistent with the Proposal's budget and timetable? Clearly, these problems and their resolutions should be considered by the Consortium in formulating its Proposed Approach and in defining the Program Plan.

The problems may focus on a variety of technical issues: In some cases, the problems may relate to the need for fundamental technological breakthroughs in order to develop a currently non-existing Technology / product. In others, the Technological problems may be relatively straightforward, with key issues relating to product integration into an existing line or management of a complex, inter-disciplinary, multi-task project. Items to be addressed in this sub-section include:

- Definition of the required properties and functions of the developed technology that will be used in the market environment. Often, this is referred to as the "spec. sheet". This is the Position B referred to previously in this section. What market input has contributed to formulating the end-product characteristics?
- Identification and description of the challenges associated with realizing the required properties and functions. This is an in-depth discussion of the Technological issues that must be addressed in order to achieve the Program's objectives. The Consortium should indicate here the Technological resources it has at its disposal to accomplish this.

### 7.7.2 Proposed Approach

The proposed approach starts by outlining a general plan of the proposed effort, setting the stage for the following, more detailed task descriptions. This overall plan includes the **milestones** that need to be reached in order to realize the Program's objectives; in other words, "what has to be done". These should be straightforward descriptions, with no discussions, as yet, of how the Consortium anticipates tackling the problems in order to get from Position A to Position B, including:

- Description of the techniques and methods to be used for developing the Program. This should include relevant experience in developing similar Technologies, to illustrate the existence of a valid experience base.
- Any technical or economic constraints in realizing the Proposal's program.
- Discuss alternate approaches to resolving problems and the basis for selecting the preferred solution. Even if a preferred solution has not yet been identified, the various alternatives should be reviewed, along with their pros and cons.

Describe, for each Task (see next sub-section), the specific approach that will be employed, i.e., how to get from Position A to Position B. Detail the specific techniques to be used to solve the previously identified problems. Thus, in this sub-section, the Consortium demonstrates that not

only is it aware of the state-of-the-art in the industry and the limitations of current practices, but it also has an innovative idea, it understands the challenges associated with developing the idea to, at least, the level of **Technology demonstration**, and knows how to deal with the major obstacles. For each task, provide supporting information which justifies the specific approach, where appropriate.

Since the final objective is technology leading to products or processes, Tasks defined should include **compliance to standards**, prototyping, regulatory approvals, lab and beta testing, documentation, etc. For those tasks relating to "testing", for example, details should be given as to what is to be tested, how many tests are needed, test objectives, test methodology, expected results, etc., rather than writing "tests will be performed".

### 7.7.3 Definition and Detailed Description of Program Tasks

This sub-section is the heart of the technical part of the proposal, in which **specific and measurable Tasks** are defined, stating the objective and contents for each Task, the resources required and the CMs with primary responsibility for carrying out the Task.

The Tasks should include **Annual Reviews** in which, once a year, the status of the program is presented to the EC with the participation of all CMs.

Following are the guidelines for the detailed description of the Tasks:

1. Define up to 25 tasks to be carried out throughout the (maximum of) 5 years comprising the development period of the Program. Number and name each one of the Tasks.
2. Any specific task can be carried out by **1 or more CMs**, whether from IL or from the U.S., which have to be identified.
3. Each Task must have a specific starting and ending date, specified by **calendar month / year**. Thus, Tasks start at the beginning of the month and end at the end of the month. The duration of each Task **is not limited in time**.
4. The following information is to be supplied for each Task, using the form given in Table 7, below:
5. Task # and name
6. Task starting and ending dates (in MM/YYYY format) and Task Duration
7. Consortium members participating in each Task, their responsibilities (roles) within the Task and their total Task Budget
8. Major Task objectives
9. Task description, approach to Task execution and potential difficulties in reaching the Task objectives
10. Measurable milestones to be achieved in the Task

Notes: (1) There must be **complete consistency** in the numbers, names, starting and ending dates and assignment of the Tasks listed here and those listed in the Program Plan (see Section E, below) and Program Budget (see Section L, below).

(2) The "Detailed Task Description Form" in Table 7 is included in the downloadable FP template.

Task #			
Task name			
Task duration (months)			
Start date (month/year)		End date (month/year)	
<b>#</b>	<b>Consortium Member Name</b>	<b>Budget (K\$)</b>	<b>% of Task Budget</b>
		=====	=====
Total for Task:			100%
<b>Objective of Task</b>			
<b>Task Description</b>			
<i>(This field can be expanded or contracted, as needed)</i>			
<b>Approach to Task Execution and Potential Difficulties</b>			
<i>(This field can be expanded or contracted, as needed)</i>			
<b>#</b>	<b>Description of Responsibilities within Task Among Consortium Members</b>		
<b># of the milestone(s) to be achieved:</b>			

Table 7: Detailed Task description Form

#### 7.7.4 Schedule of Program Milestones and Deliverables

1. General guidelines:

- Please use the table below to fill-out the schedule of **Milestones and Deliverables** (henceforth: “**M&Ds**”) in your **EC Consortium Program**. The table will be copied to Annex E of the ECFA (Energy Center Funding Agreement). The M&Ds will be monitored / reviewed and updated throughout the (maximum) 5 years duration of the EC Program.

- M&Ds are to be defined and presented separately in 2 categories / classes:
  - (a) Major M&Ds in Overall (maximum) 5 Program Years
  - (b) Specific M&Ds in First 2 Program Years
- A separate schedule of M&Ds should be defined for the US and for the IL Consortium Members of the EC Program.

2. Major M&Ds in Overall (maximum) 5 Program Years:

In the table below, please define and describe in 1-2 sentences the **major / tangible M&Ds** targeted for **the entire (maximum) 5 years program**. (The total number of M&Ds in the table can be changed, as planned.)

Note: The "Major Milestones and Deliverables" tables ahead are included as WORD tables in the downloadable FP template (File #2).

<b>Major Milestones and Deliverables in Overall program</b> (fill-out only the white cells)				
<b>Consortium Name:</b>				
<b>Consortium ID:</b>				
<b>Country:</b> (mark with "X")	IL		U.S.	
Milestone #	<u>Major Milestone</u> Definition / Description and How Will It be Measured			Milestone Date (Program Year - YYYY)
1				
2				
Deliverable #	<u>Major Deliverable</u> Definition & Description			Deliverable Date (Program Year - YYYY)
1				
2				[end of program]

3. Specific M&Ds in First 2 Program Years:

- In the table below, please define and describe in 1-2 sentences the specific M&Ds targeted for **the first 2 program years** (The total number of milestones can be changed, as planned.)
- The M&D # should coincide with the # of the Major M&D # defined in the table above.
- For each M&D, please indicate the **Semi-Annual Segment** in which the M&D will be accomplished / realized (segments 1-4).

- For each M&D, please indicate the **Program Task #** to which the M&D will be associated. This should coincide with the Milestones defined in the “Detailed Description of Program Tasks” in Section E of your Program Proposal.

<b>Specific Milestones and Deliverables in First 2 Program Years</b> (fill-out only the white cells)				
<b>Consortium Name:</b>				
<b>Consortium ID:</b>				
<b>Country:</b> (mark with “X”)	<b>IL</b>	<b>U.S.</b>		
Milestone #	<u>Specific Milestone</u> Definition    / Description                      and How Will It be Measured	Semi-Annual Segment # (1-4)	Associated Program Task #	
1a				
1b				
1c				
2a				
2b				
2c				
Deliverable #	<u>Specific Deliverable</u> Definition & Description	Semi-Annual Segment # (1-4)	Associated Program Task #	
1a				
1b				
2a				
2b				

## 7.8 Section F: Program Plan (GANTT)

The Program Plan should consist of a chronological schedule of program activities, defined as **Tasks** and presented in graphical form (**GANTT chart**). The chart should indicate clearly only the following information:

- a. The Task # and name



- b. The start and finish dates of each task (in MM/YYYY format)
- c. The duration of each task (in months)
- d. The time axis should have a **resolution of quarters** (not more detailed) and should extend over a (maximum) **5 years period**
- e. Each Task is to be classified according to 1 of the following 3 classifications, and the GANTT chart should distinguish visually (graphically) between the 3 classifications:
  - Task assigned to U.S. Consortium members (CMs) only
  - Task assigned to Israel CMs only
  - Task assigned to both U.S. and Israel CMs

If the Program Plan Chart comprises several pages, only a one-page summary GANTT chart should be included here. An example of a GANTT chart with the required details is illustrated in Fig. 3, below:

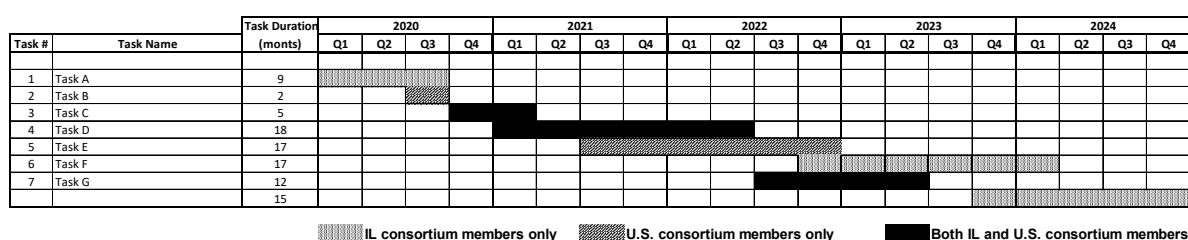


Fig. 3: Details Required in Program Plan GANTT Chart (example)

- Notes:** (1) The Tasks listed in the Program Plan GANTT Chart should coincide with those described in Section E, above, both in assigned number, name, start and finish dates and duration.
- (2) It is strongly recommended to generate the GANTT chart using **Microsoft Project®**. The GANTT Chart file generated by this software should be included in the Uploads to the EC / BIRD website (see Section 8, ahead).

## 7.9 Section G: The Market

Although we are aware of the uncertainties implicit in predictions of future markets and possible competition for any new product or process, the Consortium should make an **analysis of the market** and its current trends. Such an analysis will typically include the following considerations, which should be addressed in this section of the Proposal:

- Which market needs are served? Are any CMs currently active in developing, manufacturing and selling products based on the developed technology in this market? What is the basis for those market needs?
- What performance features and **selling price**, and hence manufacturing cost, must be achieved to penetrate this market? Provide the basis for the **manufacturing cost** and enough information to enable the reviewers to determine the likelihood of achieving the target cost. How does this cost compare with those of other, similar products developed and sold by any CM? Identify any key aspects of the technical development which could adversely affect realization of the target manufacturing cost and describe the fallback options. If the technology is part of a system not to be developed within this Proposal's Program, indicate the leverage afforded for sales of the overall system by the proposed Program, and include a comparison of the manufacturing cost of the proposed innovation to that of the entire commercial system.

- What is the total **currently available market** for the 1-2 most likely application products based on the developed technology (in physical units and in US \$)? What is the current position (**market share**) of the companies in this market? What is the expected **growth rate** of this market over the effective sales window of the technology being developed and what is the basis for this projection? What events could significantly alter this projection?
- What **market share** is expected to be captured in the first year of market entry (commercialization) and over the product sales lifetime? How many units does this represent in each year of sales? What is the **unit selling price** (to third parties) of the most likely product to be developed based on the Program? How will the unit sales price change from the year of the product launch to subsequent years?
- Additional pertinent market information, such as product brochures, expressions of interest from potential customers in the products or processes to be developed, marketing agreements, etc., should be included.
- What **competition** exists or can be expected? Who are the companies, what are their products, performance and prices? Provide an evaluation of the impact of competition on the commercialization of the proposed Program.

This is not a complete list. The CMs should present whatever additional market information it considers relevant. The quantitative estimate of the annual market size, sales revenue and market share for a representative (typical) product based on the developed technology should be summarized in Table 8, below (should be identical to the estimate presented in the Executive Summary in Section C, above):

Description	Calendar Year				
	2025	2026	2027	2028	2029
First calendar year of commercial sales	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>
Year of commercialization	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Definition of units:	MWH				
Market annual growth rate (%)	5.0%				
Market size (K Units)	5,000	5,300	5,600	5,900	6,200
Market share (%)	1.0%	1.1%	1.3%	1.4%	1.6%
Annual units sold (Units)	50,000	60,000	70,000	80,000	100,000
Cumulative units sold (Units)	50,000	110,000	180,000	260,000	360,000
Product price (\$/unit)	500.00	500.00	500.00	500.00	500.00
	=====	=====	=====	=====	=====
Annual product sales revenue (M\$)	<b>25</b>	<b>30</b>	<b>35</b>	<b>40</b>	<b>50</b>
Cumulative product sales revenue (M\$)	25	55	90	130	<b>180</b>

Table 8: Forecast of Annual Market Size and Share and of Sales Revenue for a Representative Product (example)

Note: The "Forecast of Annual Market Size and Share and Sales Revenue" in Table 8 is included as an Excel sheet in the downloadable FP template (File #2).

## 7.10 Section H: Commercialization – Plans and Prospects

In addition to a promising market potential, a **commercialization program** needs to be planned and implemented. Some of the questions to be discussed are:

- Describe the main challenges and milestones required to reach commercialization.
- Which of the CMs will be engaged in the commercialization efforts?
- Which CMs will be engaged in production? What are the existing **manufacturing** facilities?
- Do any of the CMs currently have a suitable **sales and service network**? If there is such a network, it should be described. Alternatively, does such a network need to be created from scratch? If so, describe the process by which the Consortium plans to establish such a network and the resources required.
- To what extent are the necessary resources – financial or otherwise – available within the Consortium? If any additional resources will be required, how will they be mobilized? Describe all relevant potential sources.

## 7.11 Section I: Cooperation, Economic and Social Benefits

Previous sections dealt with the proposed division of tasks between the CMs. Please summarize here the projected mode and extent of **cooperative activity in areas of R&D**, including the sharing of R&D infrastructure, the industrial development of technology, etc.

- Describe the **synergies** between the U.S. and Israel CMs, the plans to leverage experience and expertise of other organizations in the Consortium and the added value of the Consortium.
- Describe the **risk-sharing** by CMs during the Program development stage and during the potential commercialization.
- Describe the **benefit to Israel and the U.S.**, such as new export markets, new employment opportunities, new capital formation, productivity improvements, etc., including social contributions of the program outcome.

## 7.12 Section J: Organization and Management Plan

This section should contain a presentation of the proposed **management procedures** for the Program, including the **internal review procedures** and overall management plan that will ensure, barring unforeseeable circumstances, implementation according to design specifications, on schedule and within Budget.

- Describe the procedures to be implemented to maintain **timely communications** between the Program team of each CM. Indicate the role of review meetings (when, where, or what purpose, with whom) during the Program.
- Provide an **organization chart** for the Program, identifying the Program Manager of each Consortium member, the Israel Lead (ILL) and U.S. Lead (USL) Program Managers and the overall Consortium Program Manager (if such a manager is appointed by the Consortium) and indicate the relationship of this ad hoc organization to the formal hierarchies in the organizations of CMs. For each CM, identify the Program's **key personnel and their responsibilities**.
- Regarding staff – For each CM, indicate **positions to be filled by new employees** and identify the status of these staff.

- Identify the role of **key consultants and subcontractors** on the organization chart of each Consortium member and indicate if a relationship between the consultants / subcontractors and the CMs currently exists. **Resumes of key consultants** should be included.
- For each CM, attach short **resumes** (up to one page each) of **key personnel** who will work on the Program project. The resumes should include each individual's role in the Program (i.e., project manager, senior software engineer, field engineer, etc.). Include the person's current company affiliation, job title, relevant job experience and significant accomplishments, starting from the most current position. Indicate higher education and degrees and list professional affiliations and committee memberships.

Note: *In the final analysis, the determining factors in the successful commercialization of innovations are **the people and the companies** involved. The reviewers of the proposal need to see that the experience, education and capabilities of the professional staff are commensurate with the R&D tasks to be performed.*

## 7.13 Section K: The Consortium Members and Their Resources

Please provide information about **each Consortium Member (CM)**, including the following:

- The year in which the co. / org. was established, the **ownership** and the **principal business**.
- The capability of the CM and its proposed team to address all aspects of the proposed work, with a good chance of success.
- Recap of the specific parts of the program that the CM is expected to contribute to / is responsible for.
- **Record of performance in similar / related undertakings** - Describe the extent to which Technologies / products similar or related to the proposed innovation have been developed and commercialized by the co. / org. Describe the track record or history of the co. / org. that also substantiates a positive prognosis for this proposed Program's successful commercialization.
- Degree to which the proposed Program can be absorbed into the existing structure of the co. / org. To what extent are the staff, equipment, facilities, etc., available for the Program? Identify the need to hire staff, obtain (purchase, lease or rent) capital equipment, or expand manufacturing operations.
- Description of previous projects for which the co. / org. received **BIRD funding**. Indicate the program scope, program duration and outcome in commercial terms, i.e., **revenues from commercialization** of the BIRD product and repayments to BIRD. Also indicate the future commercial potential of products previously developed in BIRD projects.
- Relationship of the proposed Program to other co. / org. projects that receive / have **received financial support** from any outside agency for development of the proposed Program, such as the **IIA, the MOE, the NIH, the NIST, the DOE, DHS, MOPS**, etc.
- Financial information validating that the co. / org. **has the resources available**, not only for contributing their share of the Program's cost, but also to cover the commercialization phase. Public companies can submit annual and quarterly reports rather than specially prepared information. At a minimum, **annual revenues expected** during the current fiscal year and realized during each of the last two fiscal years should be given, in addition to an indication of the profitability of the co. / org. during this period.
- **Number of employees** at the home country, at field locations and abroad should be given, along with an indication of changes in the employment picture during the past two years.

- Description of relevant **facilities, equipment, infrastructure**, etc., which are expected to be utilized during the development Program and during commercialization.

## 7.14 Section L: The Budget

### 7.14.1 Introduction and General Guidelines

- All **development expenses** directly associated with the Proposal Program, to be incurred by each Consortium member throughout its entire development phase (maximum 5 years), should be included in the Budget (and not only those expenses falling within the scope of work of the EC-sponsored portion of the development).
- The EC's funding of the Program, if approved, begins from the **Effective Date** of the Proposal Program, which may be as early as the 1<sup>st</sup> day of the month following the approval of the Proposal by the EC, signed by an authorized official of both the ILL and the USL. Expenses incurred by any CM prior to the Effective Date cannot be recognized by the EC.
- A **separate Budget** should be presented for each CM's activities. In addition, the Proposal should also present, in **summary form only** (see below):
  1. the **combined Budget** of the ILL and all other **Israel** CMs under its responsibility / management (the **ILB**);
  2. the **combined Budget** of the USL and all other **U.S.** CMs under its responsibility / management (the **USB**);
- Before starting the Budget-building process, the Consortium should **already have available**:
  1. The definition of up to **25 major tasks** (activities), including the **number and name** (short textual description) of each task, which should completely coincide with the tasks defined and described in Section E of the Proposal, above.
  2. The **Effective Date and finish dates** of each task (**in MM/YY format**), or as a default, the **duration (in days) of each task**, which should completely coincide with the assignments in Section E of the Proposal and the GANTT chart presented in the section "Program Plan" (Section F), above.
- The task number, task name, start and finish dates and duration of all (up to 25) tasks **are the same** for all CMs, but the Budgets of each Task are, obviously, **different** for each CM.
- The **Total Budget** of each CM is prepared by estimating the development expenses of the CM for each task, called the **Task Budget**, and summing it for all tasks (in a "bottom-up" approach).

Note: *The detailed Budget components, the calculation of these components and the presentation of the Budget in different formats and detail levels (see Section 7.14.2, below) have been incorporated in an **Excel Budget Workbook** (henceforth: "**EBW**"). This workbook is available to the Consortium and can be downloaded from the EC website (File #3 in <https://us-isr-energycenter.org/guidelines-forms/>). It is essential that all Budget Tables / Reports required in the Proposal (see Section 7.14.2, below) be prepared in the Proposal and submitted to the EC **using this EBW**.*

- The **expense components** of the **Task Budget**, an example of which is given in Table 9, below, as well as of all other Budget Tables / Reports required in the Proposal (see Section 7.14.2, below), are defined by the following **functional categories**:

- i. Labor
  - ii. Equipment
  - iii. Expendable Materials and Supplies
  - iv. Travel
  - v. Subcontracts
  - vi. Consultants
  - vii. Other Expenses
- In the Proposal, each CM should prepare its Budget in detailed form, using, as starting point, the same EBW, in which the following info has been entered (filled-in) for all defined Tasks (each Task is a different worksheet in the EBW, an example of which is given in Table 9, below):
    - a. Task number (from 1 to 25)
    - b. Task name (up to 35 characters long)
    - c. Task start date (in MM/YY format)
    - d. Task finish date (in MM/YY format)
    - e. Task duration (in both days and months, which is **calculated automatically** in the EBW but can be inserted manually, as an override)

# Energy Center Procedures Handbook

## Version F8, July 28, 2020

Org. Name: <b>Company A</b>		Task #: <b>1</b>	Task name: <b>Task 1</b>	
<b>TASK BUDGET</b>		From date: <b>01/20</b>	MM/YY	To date: <b>10/20</b>
		Task duration: <b>300</b>	days	or: <b>10</b>

Description	Details	Cost (\$)	Total (\$)
<b>I. Direct Labor</b>			
Employee's Name (TBD if yet unknown)	Employee's Profession	Employee Location	Gross Annual Salary* (\$)
			% on Task
			No. of Days in Task
			Cost to Project (\$)
Empl. 1:	Employee A	Profession 1	IS
Empl. 2:	Employee B	Profession 2	US
Empl. 3:			
Empl. 4:			
Empl. 5:			
Empl. 6:			
Empl. 7:			
Empl. 8:			
Empl. 9:			
Empl. 10:			
Empl. 11:			
Empl. 12:			
Empl. 13:			
Empl. 14:			
Empl. 15:			
Empl. 16:			
Empl. 17:			
Empl. 18:			
Empl. 19:			
Empl. 20:			
<b>Total, Direct Labor</b>		* Including social benefits	
<b>Overhead @ 25%</b>			
<b>Subtotal, Direct Labor + Overhead</b>			
		<b>160,417</b>	
		<b>40,104</b>	
			<b>200,521</b>
<b>II. Equipment</b>			
Purchased Equipment Description	Purchased Cost (\$/unit)	No. of Units	% On Task
			% Annual Depreciation
			Depreciation (\$)
Item 1	Equipment A	500,000	1
Item 2	Equipment B	200,000	2
Item 3:			
Item 4:			
Item 5:			
Item 6:			
Item 7:			
Item 8:			
Item 9:			
Item 10:			
Item 11:			
Item 12:			
Item 13:			
Item 14:			
Item 15:			
<b>Subtotal, Purchased Equipment</b>			
		<b>71,233</b>	
Leased Equipment Description	Monthly Lease Cost (\$/unit)	No. of Units	% On Task
Item 1	Equipment C	10,000	1
Item 2:			
Item 3:			
<b>Subtotal, Leased Equipment</b>			
<b>Subtotal, Purchased or Leased Equipment</b>			
		<b>50,000</b>	
			<b>121,233</b>
<b>III. Expendable Materials &amp; Supplies</b>			
Description	Cost (\$)		
Item 1	Materials 1	10,000	
Item 2:	Materials 2		
Item 3:			
Item 4:			
Item 5:			
Item 6:			
Item 7:			
Item 8:			
Item 9:			
Item 10:			
Item 11:			
Item 12:			
Item 13:			
Item 14:			
Item 15:			
<b>Subtotal, Expendable Materials &amp; Supplies</b>			
		<b>10,000</b>	

Table 9: Content & Format of the **CM Task Budget** (example)

Energy Center Procedures Handbook  
Version F8, July 28, 2020

Co. Name: Company A

**PROPOSED TASK BUDGET (cont.)**

Task #: 1

Task name: Task 1

Description			Details				Cost (\$)	Total (\$)
<b>IV. Travel</b>								
<b>Foreign Travel</b>								
	Destination	Purpose	Cost Per Person Per Trip (\$)	No. of Trips	No. of People Per Trip	Duration Per Trip (days)	Cost (\$)	
Dest. 1	Destination A (USA)	Purpose A	4,000	2	1	7	8,000	
Dest. 2	Destination B (Israel)	Purpose B	6,000	1	2	10	12,000	
Dest. 3			-		-	-	0	
Dest. 4			-		-	-	0	
Dest. 5			-		-	-	0	
Dest. 6			-		-	-	0	
Subtotal, Foreign Travel				3			20,000	
<b>Domestic Travel</b>								
	Destination	Purpose	Cost Per Person Per Trip (\$)	No. of Trips	No. of People Per Trip	Duration Per Trip (days)	Cost (\$)	
Dest. 1	Destination C (USA)	Purpose C	2,000	3	2	3	12,000	
Dest. 2			-		-	-	0	
Dest. 3			-		-	-	0	
Subtotal, Domestic Travel				3			12,000	
Subtotal, Travel								32,000
<b>V. Subcontracts</b>								
	Service to be Performed		Name of Subcontractor			Cost (\$)		
Subcont. 1	Service 1		Subcontractor A			35,000		
Subcont. 2	Service 2		Subcontractor B			60,000		
Subcont. 3								
Subcont. 4								
Subcont. 5								
Subcont. 6								
Subtotal, Subcontracts								95,000
<b>VI. Consultants</b>								
	Service to be Performed		Name of Consultant	Hourly Rate (\$/Hr.)	No. of Hours	Cost (\$)		
Consult. 1	Service C		Consultant A (USA)	200	50	10,000		
Consult. 2	Service D		Consultant B (IL)	150	100	15,000		
Consult. 3				-		0		
Consult. 4				-		0		
Consult. 5				-		0		
Consult. 6				-		0		
Subtotal, Consultants								25,000
<b>VII. Other Expenses</b>								
	Description						Cost (\$)	
Item 1	Other expense A						30,000	
Item 2	Other expense B						60,000	
Item 3								
Item 4								
Item 5								
Subtotal, Other Expenses								90,000
Subtotal task budget, before G&A Expenses								573,754
General & Administrative Expenses (G&A) @ 5%								28,688
Total Task Budget								602,441

Table 10: Content & Format of the **CM Task Budget** (example) (continuation)

**Note:** In all the EBWs, only the cells highlighted in yellow are the **input cells**.

## 7.14.2 Budget Reports / Tables Required in the Proposal

The following budget-related reports / tables, all generated by the Excel Budget Workbook (EBW), must be included in the proposal:



- **Total Budget** Table, required for each CM - Example of the Budget components, the structure and the format of the Total Budget of each CM is given in Table 12. It is the sum total of the Budgets of all the Tasks (up to 25 Tasks) in which the CM has an involvement.
- **Budget Summary** Table, required for each CM – Example of the summary of the CM's Budget, by functional category, for each Task is given in Table 11, below.
- **Budget Summary by Country** (Israel or U.S.) Table – The summary of the Budgets of all CMs belonging to either **Israel** (the **ILB**, under the management of the ILL) or to the **U.S.** (the **USB**, under the management of the USL). It is identical in content and in format to the Budget Summary Table, given in Table 11, below.

Organization Name: Company A

Task #	Task Name	Task Duration (days)	Cost Components of Tasks (\$)									Total Task Cost
			Direct Labor	Labor Overhead (25%)	Equipment	Expendable Materials & Supplies	Travel	Sub-contracts	Consultants	Other Expenses	G&A Overhead (5%)	
1	Task 1	300	160,417	40,104	121,233	10,000	32,000	95,000	25,000	90,000	28,688	602,441
2	Task 2	180	66,000	16,500	117,534	0	32,000	135,000	0	11,593	18,931	397,559
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
Total for project			226,417	56,604	238,767	10,000	64,000	230,000	25,000	101,593	47,619	1,000,000

Table 11: Content & Format of the **Budget Summary** of each CM or of all IL / US Members, Generated by the EBW (example)

Note: In all the EBWs, only the cells highlighted in yellow are the **input cells**.

Energy Center Procedures Handbook  
Version F8, July 28, 2020

**TOTAL BUDGET**

Consortium Name: Consortium A  
Country: IS  
Organization name: Company A  
Project duration: 60 months

Description		Details			Cost (\$)	Total (\$)
I. Direct Labor						
	Employee's Name (TBD if yet unknown)	Employee's Profession	Employee location	Gross Annual Salary* (\$)	% on Project	Cost to Project (\$)
Empl. 1:	Employee A	Profession 1	IS	100,000	14%	71,667
Empl. 2:	Employee B	Profession 2	US	150,000	21%	154,750
Empl. 3:					0%	0
Empl. 4:					0%	0
Empl. 5:					0%	0
Empl. 6:					0%	0
Empl. 7:					0%	0
Empl. 8:					0%	0
Empl. 9:					0%	0
Empl.10:					0%	0
Empl. 11:					0%	0
Empl. 12:					0%	0
Empl. 13:					0%	0
Empl. 14:					0%	0
Empl. 15:					0%	0
Empl. 16:					0%	0
Empl. 17:					0%	0
Empl. 18:					0%	0
Empl. 19:					0%	0
Empl. 20:					0%	0
Total, Direct Labor						226,417
Overhead @ 25%						56,604
Subtotal, Direct Labor + Overhead						283,021
II. Equipment						
	Purchased Equipment Description	Purchased Cost (\$/unit)	No. of Units	% On Project	% Annual Depreciation	Depre- ciation (\$)
Item 1	Equipment A	500,000	1	8%	33.3%	68,493
Item 2	Equipment B	200,000	2	9%	33.3%	60,274
Item 3				0%	33.3%	0
Item 4				0%	33.3%	0
Item 5				0%	33.3%	0
Item 6				0%	33.3%	0
Item 7				0%	33.3%	0
Item 8				0%	33.3%	0
Item 9				0%	33.3%	0
Item 10				0%	33.3%	0
Item 11				0%	33.3%	0
Item 12				0%	33.3%	0
Item 13				0%	33.3%	0
Item 14				0%	33.3%	0
Item 15				0%	33.3%	0
Subtotal, Purchased Equipment						128,767
	Leased Equipment Description	Monthly Lease Cost (\$/unit)	No. of Units	% On Project	Total Leasing Cost (\$)	
Item 1	Equipment C	10,000	1	18%	110,000	
Item 2				0%	0	
Item 3				0%	0	
Subtotal, Leased Equipment						110,000
Subtotal, Purchased or Leased Equipment						238,767

Table 12: Content, Structure and Format of the Total Budget of each CM, Generated by the EBW (example)

Energy Center Procedures Handbook  
Version F8, July 28, 2020

TOTAL BUDGET (cont.)							
Organization name: <span style="border: 1px solid black; padding: 2px;">Company A</span>							
Description		Details			Cost (\$)	Total (\$)	
<b>III. Expendable Materials &amp; Supplies</b>							
	Description					Cost (\$)	
Item 1	Materials 1					10,000	
Item 2	Materials 2					0	
Item 3						0	
Item 4						0	
Item 5						0	
Item 6						0	
Item 7						0	
Item 8						0	
Item 9						0	
Item 10						0	
Item 11						0	
Item 12						0	
Item 13						0	
Item 14						0	
Item 15						0	
Subtotal, Expendable Materials & Supplies						10,000	
<b>IV. Travel</b>							
<b>Foreign Travel</b>							
	Destination	Purpose	Cost Per Person Per Trip (\$)	No. of Trips	No. of People Per Trip	Duration Per Trip (days)	Cost (\$)
Dest. 1	Destination A (USA)	Purpose A	4,000	3	1	7	12,000
Dest. 2	Destination B (Israel)	Purpose B	6,000	3	2	10	36,000
Dest. 3				0			0
Dest. 4				0			0
Dest. 5				0			0
Dest. 6				0			0
Subtotal, Foreign Travel						6	48,000
<b>Domestic Travel</b>							
	Destination	Purpose	Cost Per Person Per Trip (\$)	No. of Trips	No. of People Per Trip	Duration Per Trip (days)	Cost (\$)
Dest. 1	Destination C (USA)	Purpose C	2,000	4	2	3	16,000
Dest. 2				0			0
Dest. 3				0			0
Subtotal, Domestic Travel						4	16,000
Subtotal, Travel							64,000
<b>V. Subcontracts</b>							
	Service to be Performed	Name of Subcontractor	Country Service Given	Cost (\$)			
Subcont. 1	Service 1	Subcontractor A	USA	75,000			
Subcont. 2	Service 2	Subcontractor B	Israel	155,000			
Subcont. 3				0			
Subcont. 4				0			
Subcont. 5				0			
Subcont. 6				0			
Subtotal, Subcontracts							230,000
<b>VI. Consultants</b>							
	Service to be Performed	Name of Consultant & Country Service Given	Hourly Rate (\$/Hr.)	No. of Hours	Cost (\$)		
Consult. 1	Service C	Consultant A (USA)	200	50	10,000		
Consult. 2	Service D	Consultant B (IL)	150	100	15,000		
Consult. 3				0	0		
Consult. 4				0	0		
Consult. 5				0	0		
Consult. 6				0	0		
Subtotal, Consultants							25,000
<b>TOTAL BUDGET (cont.)</b>							
Organization name: <span style="border: 1px solid black; padding: 2px;">Company A</span>							
Description		Details			Cost (\$)	Total (\$)	
<b>VII. Other Expenses</b>							
	Description					Cost (\$)	
Item 1	Other expense A					41,593	
Item 2	Other expense B					60,000	
Item 3						0	
Item 4						0	
Item 5						0	
Subtotal, Other Expenses						101,593	
Subtotal budget, before G&A Expenses						952,381	
General & Administrative Expenses (G&A) @5%						47,619	
Total Proposal Budget for Organization						1,000,000	
<b>Projected Expenditure, by Segment</b>							
Segment #	Segment Duration (months)	% of Total Budget	Projected Expenditure (\$)				
1	6	40%	400,000				
2	6	60%	600,000				
3	6		0				
4	6		0				
5	6		0				
6	6		0				
7	6		0				
8	6		0				
9	6		0				
10	6		0				
Total:	60	100%	1,000,000				

Table 13: Content, Structure and Format of the **Total Budget** of each CM, Generated by the EBW (example) (continuation)

### 7.14.3 Step-By-Step Explanation on Budget Preparation

1. Proceed to build each CM's Budget using the EBW. You can start the process with any of the Tasks and in any order, by activating the corresponding worksheet labeled "Task 1" through "Task 25" (see Table 9, above, for the format of "Task Budget:"). You are asked **to relate only to the input data cells, colored yellow**.

Note: *Instructions and comments related to specific expense components and data items in the EBW are given for items colored light green. You can read the comments by pointing to the specific cell. The instructions and comments are also given below.*

2. Whenever there is a need to define the name of a specific expense, such as the name and profession of a specific employee (in direct labor), the name and purchase cost of a specific equipment item, the name of a specific expendable material, etc., enter the definition in the appropriate location (always in a yellow-colored cell) of the **"Total Budget" worksheet**. The information you enter in the "Total Budget" worksheet will be copied to and will appear in all the Task worksheets.

Note: *If the formats of specific input cells do not provide you enough space to insert a meaningful description of the expense items, please attach an appendix to the budget form containing the referenced full-length description of these expense items.*

3. After defining a specific expense, return to the Task worksheet you have started to work on and complete the input information concerning the specific expense (again, by entering data only in the yellow-colored cells). Repeat this sequential procedure for all the expense categories relevant to the Task.
4. Follow the procedure described in items 2 and 3, above for all the Tasks in your Proposal Program. The total cost of a Task will be calculated at the bottom of the Task worksheet (including all built-in overhead allowances) and will also appear in the **"Tasks Report"** summary worksheet, itemized by expense type (see Table 11, above).
5. The **cumulative values** of all the expense components in all Tasks will appear in the "Total Budget" worksheet, at the corresponding location of the expense component in the Tasks worksheets.

Note: *Only the 2 pages of the "Total Budget" worksheet (see Table 12 and Table 13, above) for each CM should be included in Section L ("The Budget") of the Proposal. Please **do not attach** the budget worksheets of the individual Tasks to the Proposal document. The complete EBW softcopy of the "Task Budget", which includes the individual Budgets of each Task, **should be uploaded to the EC / BIRD upload system** (<https://ec-upload.birdf.com>), in parallel with the submittal of the hardcopy.*

### 7.14.4 Guidelines for Each Functional Expense in the Budget

#### I. Direct Labor

The Gross Annual Salary, an input item, is the actual current salary plus social ("fringe") benefits of employees expected to work on the Program. The maximum annual salary (including social benefits for a full-time position) currently recognized is **\$100,000** for Israeli organizations and **\$150,000** for U.S. organizations. Typically, in addition to the engineering and technical personnel, the staff includes prototyping, R&D documentation and marketing personnel. NOT to be included are corporate executives, secretarial staff, legal staff, administrative staff or staff engaged in selling activities. Such expenses are included in the **overhead allowance**.

The % on Program, an input item, is the average portion of any given worker's time spent directly on the Program throughout the entire duration of the Program (maximum 5 years), given as a percent.

The Cost to Project, a computed item, is the product of the Gross Annual Salary (including social benefits) x % on Program x number of months on the project / 12.

Overhead (O/H), at the rate of **25% on the total direct labor**, is a computed item and includes all indirect labor overhead expenses.

## II. Equipment

Depreciation – This Budget item refers to depreciation allowance on capital equipment employed and not to capital expenditures. The depreciation allowance equals the purchase cost of the equipment item being employed (an input item given in \$/unit) x number of units employed (an input item) x % of the time in which the equipment is employed on the project (an input item) x the annual depreciation rate (in % per year). **The annual depreciation rate currently allowed is 33.3%.**

The Leasing Cost equals the monthly lease cost or rental cost of capital equipment (an input item given in \$/unit/month) x the number of units leased / rented (an input item) x % of the time in which the leased / rented equipment is employed by the Program (an input item) x project duration (in months).

## III. Expendable Materials & Supplies

List and describe each major item or groups of related items categorized as expendable materials and supplies.

Note: For any item that is over **\$50,000**, please provide a breakdown and more detail.

## IV. Travel

Travel expenses should be classified as either **foreign or domestic travel**. In either case, the trips should be itemized by the destination and the purpose of the trip, which should be described in a few words.

The cost (\$) is the cost per person per trip (an input item in \$) x the number of people per trip (an input item) x the number of trips of the same kind taken throughout the Program (an input item). The duration per trip (in days) is just an informative data item.

## V. Subcontractors

Please identify each subcontractor, the service to be performed, the country in which the service will be given and the cost for each service.

Note: For any item that is over **\$50,000**, please provide a breakdown and more detail.

## VI. Consultants

Please identify each consultant, the nature of the consulting activity, the country in which the service will be given, the hourly rate upon which the charge will be made (an input item given in \$/hr.) and the estimated number of consultant hours (an input item).

Note: For any item that is over **\$50,000**, please provide a breakdown and more detail.

## VII. Other Expenses

Typical "Other Expenses" include items such as exhibits, regulatory activities, standards certifications, field trials, patent registration, market surveys or other miscellaneous development-related expenses not covered by any of the previous expense categories.

Please note that **patent registration** costs are allowable at up to **\$20,000 per patent**, subject to a maximum of \$25,000 per registration in two continents, with a maximum of two patents (\$40,000 or \$50,000) per Program.

Note: For any item that is over **\$50,000**, please provide a breakdown and more detail.

General & Administrative Expenses (G&A), computed (usually) at **5% of the subtotal budget**, represents all operating overhead items such as secretarial services, legal staff, rent, utilities, etc.

### Projected Expenditure, by Segment

The overall Program period (duration), whether 3 or 5 years, is organized in **equal segments of 6 months each**, for the purpose of monitoring, reporting and payment of the conditional grant funds. For each segment in the Program, please specify the segment duration (**6 months, unless otherwise approved by the EC / BIRD**) and the estimated relative expenditures for the segment (given as % of the total budget). Please note that the total segments duration must equal the total overall project duration and that the % of total budget for all segments must sum to 100%.

#### 7.14.5 Summary of the Total Budgets of the IL and the U.S. CMs

The **consolidated** (total) **Budgets** of all U.S. CMs (the **USB**) and the consolidated (total) **Budgets** of all Israel CMs (the **ILB**) (see Sections 3.4. and 3.5, above), are presented in the Full Proposal, covering the **entire duration** of the Proposal (maximum 5 years).

To the sum of the Total Budgets of the IL and of the U.S. CMs are added (**automatically**) a "lead overhead Budget allowance" of **2.5% of the total combined budgets**, as can be seen in the Combined Budgets Classified by **Tasks** in Table 14, by **CMs** in Table 15 and by equal **Program Segments** of 6 months each in Table 16, below:

Country: IS

Cost Components of Tasks (\$)													Total Task Cost Incl. ILL/USL Overhead
Task #	Task Name	Task Duration (days)	Direct Labor	Labor Overhead (25%)	Equipment	Expendable Materials & Supplies	Travel	Sub-contracts	Consultants	Other Expenses	G&A Overhead (5%)	Total Task Cost	
1	Task 1	12	192,607	48,152	51,288	1,860,000	25,000	2,110,000	25,000	159,449	223,575	4,695,071	4,812,448
2	Task 2	12	150,000	37,500	54,575	95,000	60,000	200,000	60,000	100,000	37,854	794,929	814,802
3	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total for Country		342,607	85,652	105,863	1,955,000	85,000	2,310,000	85,000	259,449	261,429	5,490,000	5,627,250
	ILL/USL overhead allowance:		2.5%	8,565	2,141	2,647	48,875	2,125	57,750	2,125	6,486	6,536	137,250
	Total for Country Incl. ILL/USL Overhead:			351,172	87,793	108,510	2,003,875	87,125	2,367,750	87,125	265,936	267,964	5,627,250

Table 14: Summary of the **Combined Budgets of all CMs** in IL / U.S., classified by **Tasks** (example for the ILB).

Energy Center Procedures Handbook  
Version F8, July 28, 2020

Country: IS

			Cost Components of Tasks (\$)									
Org.	Organization Name		Direct Labor	Labor Overhead (25%)	Equipment	Expendable Materials & Supplies	Travel	Sub-contracts	Consultants	Other Expenses	G&A Overhead (5%)	Total Task Cost
A	Company A		142,607	35,652	52,932	25,000	15,000	60,000	15,000	130,000	23,810	500,000
B	University A		200,000	50,000	52,932	130,000	70,000	250,000	70,000	129,449	47,619	1,000,000
C	Contract Research Co. A		0	0	0	0	0	2,000,000	0	0	100,000	2,100,000
D	College A		0	0	0	1,800,000	0	0	0	0	90,000	1,890,000
E	E		0	0	0	0	0	0	0	0	0	0
Total for Country			342,607	85,652	105,863	1,955,000	85,000	2,310,000	85,000	259,449	261,429	5,490,000
ILL / USL overhead allowance:			2.5%	8,565	2,141	2,647	48,875	2,125	57,750	2,125	6,486	137,250
			=====	=====	=====	=====	=====	=====	=====	=====	=====	
Total for Country Incl. ILL/USL Overhead:			351,172	87,793	108,510	2,003,875	87,125	2,367,750	87,125	265,936	267,964	5,627,250

Table 15: Summary of the **Combined Budgets** of all CMs in IL / U.S., classified by **CMs** (example for the ILB)

Country: <span style="border: 1px solid black; padding: 0 10px;"></span>			Name of Organization		Name of Organization		Name of Organization		Name of Organization		Name of Organization	
Segment #	Segment Duration (months) <sup>(*)</sup>	% of Total ILL/USL Budget	Total ILL/USL Budget (\$)		Percent of Total Budget (%)	Projected Expenditure (\$)	Percent of Total Budget (%)	Projected Expenditure (\$)	Percent of Total Budget (%)	Projected Expenditure (\$)	Percent of Total Budget (%)	Projected Expenditure (\$)
			Without Overhead Allowance	With Overhead Allowance								
1	6	-	0	0	0%	0	0%	0	0%	0	0%	0
2	6	-	0	0	0%	0	0%	0	0%	0	0%	0
3	6	-	0	0	0%	0	0%	0	0%	0	0%	0
4	6	-	0	0	0%	0	0%	0	0%	0	0%	0
5	6	-	0	0	0%	0	0%	0	0%	0	0%	0
6	6	-	0	0	0%	0	0%	0	0%	0	0%	0
7	6	-	0	0	0%	0	0%	0	0%	0	0%	0
8	6	-	0	0	0%	0	0%	0	0%	0	0%	0
9	6	-	0	0	0%	0	0%	0	0%	0	0%	0
10	6	-	0	0	0%	0	0%	0	0%	0	0%	0
<b>Total:</b>	<b>60</b>	<b>0%</b>	<b>0</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0</b>

(\*) As reported by Company A

Table 16: Summary of the Combined Budgets of all CMs in IL / U.S., classified by Project Segments (of 6 months each)

To obtain the sum of the Total Budgets of all the Israeli and of all the U.S. CMs (the **ILB** and the **USB**, accordingly), which are calculated in the EBW and presented in the Proposal by **functional classification**, follow the procedure below:

1. Rename the EBW file of any Israel CM: **Member A - budget.xlsx**, **Member B - budget.xlsx**, etc., and store them in the file directory named: **E:\EC\**

Likewise, rename and store the EBW file of any U.S. CM as in item 1, above

2. Download from BIRD's website (<https://us-isr-energycenter.org/guidelines-forms/>) "File #4 – EC Proposal Budget Summary for ILL & USL (25 tasks) (**updated** July 2020) – xlsx" and store it in the same file directory as in 1, above (**E:\EC\**).
3. Open / run the Excel worksheet that was downloaded in 2, above ("File-4-EC-Proposal-Budget-Summary-for-ILL-USL-25-tasks-10-CMs-variable-overhead-0720.xlsx").
4. Copy / Paste Table 14-16 (three tables for the ILB and three for the USB) from the Excel worksheet in (3) to the Full Proposal.

**Note:** The Excel worksheets in (3), above (File #4), one prepared by the ILL and the second by the USL, are also uploaded to the EC / BIRD upload system ((<https://ec-upload.birdf.com>)).

## 7.15 Section M: Risk Analysis

Use Table 17, below, to describe the **main risks** of the Program:

**TABLE A:** Identify at most **5 main risks**. Number the risks and give each one a short identification name. Keys for probability ranking and for evaluating impacts are provided in the 4 boxes, hereinafter.

**TABLE B:** Describe each of the identified risks concisely. Use additional space, if needed for clarity. Assign a "type" to each risk. Risks can be of different types, as exemplified in the (\*) explanation to the table. Other types may be used by adding them to the explanations.

Notes: (1) *The "Risk Analysis" template (Table 177) is included in the downloadable FP template (File #2).*

(2) *Do not make any changes in format or structure to the template.*



**TABLE A**

Risk #	Name/Description	Ranking	Impact		
			Duration <sup>1</sup>	Budget <sup>2</sup>	Commercialization Potential <sup>3</sup>
1					
2					
3					
4					
5					

**TABLE B**

Risk #	Name/Description	Type*
1		
2		
3		
4		
5		

\*Type: Technical (T), Project Management/Resources (M), External to the Project (E)

Ranking		Probability of Risk Occurring		Duration	
High		Above 50%		High	Above 2 years
Medium		30 – 49%		Medium	Up to 1 year
Low		10 – 29%		Low	Up to 6 months
Very Low		1 – 10%			

Budget		Commercialization Potential	
High	Above 20% increase	High	Above 50%
Medium	10% to 20% increase	Medium	30% to 50%
Low	Below 10% increase	Low	1% to 29%

References above:

1. **Duration** of Program extended by the amount given in the above box.
2. **Budget** - Cost of the Program increases by the % given in the above box.
3. **Commercialization Potential** - Forecasted sales in the first 3-5 commercialization years reduced by the % given in the above box

Table 17: Risk Analysis Template

## 7.16 Section N: Sundry Information – Mandatory

To enable the EC to prepare the ECFA on a timely basis following approval of the grant application by the ECEC, please provide the following information in the Proposal itself:

1. **Certificates of incorporation** – of each CM, to be provided on separate pages each.
2. Contact information of the ILL and the USL:

	Israel Lead Organization (ILL)	U.S. Lead Organization (USL)
Company / Organization Name <sup>(*)</sup>		
Venue for the <b>applicable law</b> governing the ECFA	Israel	(choose one of the U.S. States)
<b>Program Manager</b>		
Full name and title		
Position in Co. / Org.		
Email address		
Direct telephone number		
Mobile telephone number		
<b>Fiscal Information Official</b>		
Full name and title		
Position in Co. / Org.		
Email address		
Direct telephone number		
Mobile telephone number		

(\*) As it appears on the Certificate of Incorporation

3. **Details of bank accounts** - to enable the EC to transfer the payments to the ILL / USL

	Israel Lead Organization (ILL)	U.S. Lead Organization (USL)
Name of Account		
Account Number		
Name of Bank		
Branch number		(not relevant)
Complete bank address		
IBAN number		
ABA Routing number	(not relevant)	
SWIFT number	(not relevant)	

Note: The above two "Sundry Information" tables are included in the downloadable FP template (File #2).

## 8 Procedures for Proposal Submissions and Grant Award Decisions

### 8.1 Procedures and Guidelines for Proposal Submissions

The following sequential procedures and guidelines should be adhered to by the Consortium in the Proposals submission process:

- This "Call for Proposals **Submission Procedures Handbook**" can and should be downloaded from the EC website <https://us-isr-energycenter.org/guidelines-forms/> and reviewed by all CMs.
- Mark down the **Submission deadline for final Full Proposals**, published in BIRD's website (<https://www.birdf.com/energycenter-deadlines/>) and in several other media.
- It is recommended to either or both the USL and ILL to meet with a BIRD representative at least **8 weeks prior** to the submission deadline for final Full Proposals, to introduce the entities planning to form the Consortium, their innovative technology and the essence of their planned Proposal.
- As soon as a decision is made to form a Consortium and submit a Proposal to the EC, both the ILL and the USL should register at the **EC / BIRD Upload System** (<https://ec-upload.birdf.com>), including the Consortium name and Proposal title.
- It is recommended (yet, it is optional) to prepare and submit to the EC (<https://ec-upload.birdf.com>) a draft **Executive Summary (ES)** for EC staff review, before the deadline for draft ES submission (see <https://www.birdf.com/energycenter-deadlines/>). Based on this draft ES, recommendations and guidelines will be given by the EC staff on the preparation of the Full Proposal (FP). The ES form (see Table 18, below) can be downloaded from the EC website (File #1 in <https://us-isr-energycenter.org/guidelines-forms/>.)
- The **Full Proposal (FP)** should be prepared following the format and guidelines of Section 7 of the "Submission Procedures Handbook". Specific WORD forms and EXCEL worksheets to be included in the FP (see Table 18, below) can be downloaded from the EC website (File #2 in <https://us-isr-energycenter.org/guidelines-forms/>).
- It is recommended (yet, it is optional) to submit to the EC (<https://ec-upload.birdf.com>) a draft of the Full Proposal (FP) for EC staff review, before the deadline for draft FP submission (see <https://www.birdf.com/energycenter-deadlines/>). Comments and recommendations by the EC staff on missing information and on improvements to the for FP will be forwarded to the Consortium within 1 week from the receipt of the draft FP.
- The final FP document, including all complementary / supporting documents, must be submitted electronically to the EC using the EC / BIRD Upload System (see <https://ec-upload.birdf.com>) by the **Submission deadline for the final FP** (see <https://www.birdf.com/energycenter-deadlines/>). Email notification will be sent by the EC to both the USL / ILL acknowledging receipt of all FP documents submitted.

File #	File Name	File Type	Form Description and Content
1	EC Proposal - Executive Summary Template	Word	Executive Summary template (as in independent document), including Tables 2-6 and required content of subsections 1-6
2	EC Proposal - Full Proposal Template	Word	Full Proposal template, including Tables 2-8, Table 15 and Section N tables
3	EC Proposal – Budget Template	Excel	Task Budget Form (Tables 9-10), Total Budget Form (Tables 12-13), Budget Summary by Tasks (Table 11)
4	EC Proposal – Budget Summary for ILL & USL	Excel	Summary of the combined Budgets of all CMs, classified by country and expense type, for the ILL/USL only (Tables 14-16)

Table 18: Templates and Tables that can be Downloaded for Preparation of the Executive Summary and of the Full Proposal

## 8.2 Procedures and Guidelines for Grant Award Decisions

The following main sequential procedures and events related to the EC grant award decisions are expected following the FP submission process:

- Following submission of the final FP, the ILL will be contacted separately (by email and/or phone) by an MOE reviewer and an IIA reviewer to schedule a **review meeting** date with the ILL, usually at the ILL's relevant operating site. All reviewers will forward the ILL the expected meeting agenda and their requirements for background info / presentations to be prepared by the ILL in advance of the review meeting.
- Following submission of the final FP, the USL may be contacted separately (by email and/or phone) by a BIRD representative, to schedule a meeting date with the USL, usually at the USL's relevant operating site. If so, the BIRD representative will forward the USL the expected meeting agenda and the requirements for background info / presentations to be prepared by the USL in advance of the review meeting (this visit is not mandatory)
- The notification (by email) on the decision by the EC's Executive / Selection Committee (ECEC) whether to approve / reject a given submitted Proposal by a given Consortium will be made simultaneously to the ILL and USL. The approval notifications will include the decision on the **grant sum** awarded to each Consortium. Alternate awardees may be selected.
- The Consortiums which Proposals were rejected by the ECEC will not be able to submit a rebuttal to the EC for Proposal decision re-consideration.
- Subsequent to the ECEC approval / rejection decision notification to both the ILL / USL of all Consortiums which submitted FPs, the EC will publish (in several media) a notification of the grant awardees, including, for each Consortium, the names of the ILL / USL entities, the title and short description of the proposal, and the maximum grant award sum. Identities of Consortiums which Proposals were rejected by the ECEC will not be published.

## 9 Technical & Fiscal Progress Reports

### 9.1 General

As mentioned in Section 4, above, and as detailed ahead, periodic Technical Reports (TRs), Fiscal Reports (FRs) and Annual Presentations (APs) must be submitted to and approved by the EC prior to the transfer of any payment (excluding the initial grant down-payment extended upon execution of the ECFA).

- The Consortium will submit to the EC a single **semi-annual** Technical Report (TR), covering the R&D progress made since the last report and relative to the most updated approved Program Plan (see Section 9.2, below).
- The USL and the ILL will each submit to the EC a separate, **semi-annual** Fiscal Report (FR), covering the cumulative actual Program expenditures and compared to the updated approved USL / ILL consolidated Program Budgets (see Section 9.3, below).
- Periodic (semi-annual) TRs and FRs are to be submitted and received within **30 days** following the expiration of each semi-annual (6 months period) segment of the Program.
- The amount of the next periodic **grant payment** extended by the EC to the USL / ILL will be based on the semi-annual TRs and FRs of the previous 6 months.

Reports must be submitted in both soft copy and one hard copy. The soft copy should be submitted using The EC Report Upload and Management System (<https://ec-upload.birdf.com>)

The report submission date is the date of delivery of the full hard copy of the report, sent to BIRD's office to the following address:

Office Address

BIRD Foundation  
Kiryat Atidim, Building 4, 15<sup>th</sup> floor  
Tel Aviv 6158001, Israel

Mailing Address

BIRD Foundation  
P.O. Box 58054  
Tel Aviv 6158001, Israel

### 9.2 Semi-Annual Technical Reports (TRs)

#### 9.2.1 Introduction to TRs

The purpose of the Technical Reports (TRs) is to enable the EC to monitor the Program's progress and to assist it in decisions relating to the continued funding of the Program. Timeliness, conciseness and a comparison of the Program's progress as stipulated in the Program Plan (Annex D of the ECFA) should be key features of these.

A single TR is submitted by the Consortium at the completion of each **semi-annual segment**, prepared and submitted jointly by all the Consortium Members (CMs) and signed in the standard EC cover page (given in Table 19, below) by both the Program Manager and the Authorized Official of both the ILL and the USL. Technical reports that are not properly signed will not be reviewed.

The period of the reporting segment covered in the TR should coincide with the period covered in the accompanying FR. The TR will be reviewed by the EC only after receipt of the FR from both the ILL and USL, covering the same period. This will enable the EC to associate completed tasks and activities reported in the TR to the relevant expenditures reported in the FR.

TRs submitted to the EC will be treated as **confidential**. Nonetheless, proprietary or commercially sensitive information should be identified as such.

## 9.2.2 Outline and Contents of Semi-Annual TRs

Semi-annual TRs must follow the format detailed hereunder, including the name and numbering of the different sections.

Sections 4 and 5 are general and should display the Consortium's broad interpretation of the overall objectives of the Program, as well as relating to the relevant segment's objectives and accomplishments.

The following two sections thereafter, i.e., Sections 6 and 7, should provide information on a **task-by-task basis**. The tasks are the ones described in the GANTT Chart (Section F of the Proposal) of the most updated Program Proposal and in the task details section (Section E.2 of the Proposal) and in the budget (Section L of the Proposal).

Reporting on changes or expected changes in the TR alone is insufficient. Any change from the original proposal should be submitted in a letter to the EC, signed by both the ILL / USL, for its approval.

The following **13 sections** should be included in any semi-annual TR:

### 1. Standard EC TR Cover Page

The Cover Page form is given in Table 19, below, and is also given in the WORD **File #5 – EC Semi-Annual Technical Report (TR) Template**, which can be downloaded from the EC website <https://us-isr-energycenter.org/guidelines-forms/>. It must be signed by both the **Project Manager** and the **Authorized Official** of both the ILL and the USL. Technical reports that are not properly signed will not be reviewed.

### 2. Table of Contents - including page numbers

### 3. Executive Summary

In a few paragraphs (approximately 500 words or up to 1 page), describe the main R&D (technical) results and accomplishments in **Program tasks** carried out by the Consortium during the specific semi-annual period covered by the TC. Mention any milestone attained and deliverable available in this period.

Note: *The Executive Summary is a text targeted also for **external publication**, as required by the EC. Thus, it should not contain any information that the Consortium considers to be "confidential" or restricted in distribution / sharing.*

### 4. Objectives

State the **overall objectives** of the Program and of the work performed during the segment covered by the report, as defined in the Program Proposal or in approved changes to the development Program Plan.

### 5. Summary of Accomplishments

Provide an informative **summary** of the methods, results and accomplishments of the development work conducted in the period covered and **compare** the actual accomplishments with the objectives stated in Section 4, above. The summary should be self-sufficient and understandable to someone who reads nothing else in the report.

### 6. Results

Describe, with reference to the Program Plan submitted in the Program Proposal (Section F. See also Annex D of the ECFA), the results obtained during the reporting segment on an activity-

by-activity (task-by-task) basis. Identify and describe results that represent significant variations from the Program Plan. Discuss any activities / tasks that may have been eliminated or added to the Program Plan during the reporting period and give the reasons for such changes. Indicate how such modifications will affect the nature of the product / technology being developed in terms of features, specifications, performance, marketability, time-to-market, etc.

Whenever possible, the description and analysis of the results should be presented for each Consortium Member (CM), thus enabling to discuss progress and variations in the Program Plan which pertain to specific CMs.

<b><u>Semi-Annual Technical Report - Cover Page</u></b>		
<b>EC Ref. No.:</b>		
<b>To: The U.S. – Israel Energy Center</b>		
<b>Project Title:</b>		
<b>Submitted By:</b>		
IL Lead:		
US Lead:		
<b>Program's Effective Date (Start Date) (dd/mm/yy):</b>		
<b>Dates of Reporting Segment Covered:</b>	from (mm/yy):	
	to (mm/yy):	
	<b>Israel Lead (ILL)</b>	<b>U.S. Lead (USL)</b>
<b>Program Manager:</b>		
Signature:		
Printed Name:		
Title:		
E-mail:		
Telephone no.:		
<b>Authorized Organization Official:</b>		
Signature:		
Printed Name:		
Title:		
E-mail:		
Telephone no.:		
<b>Date Submitted:</b>		(dd/mm/yy)

Table 19: The Semi-Annual Technical Report Cover Page form

## 7. Graphical Comparison of Actual / Planned Activities versus Program Plan

Using the Program Plan (Annex D of the ECFA) and the tasks described there, show graphically (GANTT chart) the actual timing and status of the Program's activities (tasks) carried out thus far, and explain deviations from the Program Plan. Likewise, use the GANTT chart of the Program Plan to show **graphically** the revised planned activities (tasks) for the remainder of the Program, and explain deviations from the Program Plan. For each task, whether it has been completed, is still being carried out, or is planned later-on in the Program, indicate graphically in a single chart:

- (1) its original Program Plan timing,
- (2) its actual occurrence and % completion at the end of the reporting segment, and
- (3) its planned (and maybe re-scheduled) occurrence in the remainder of the Program.

An example of the format of such a Gantt chart is given in Fig. 4, below:

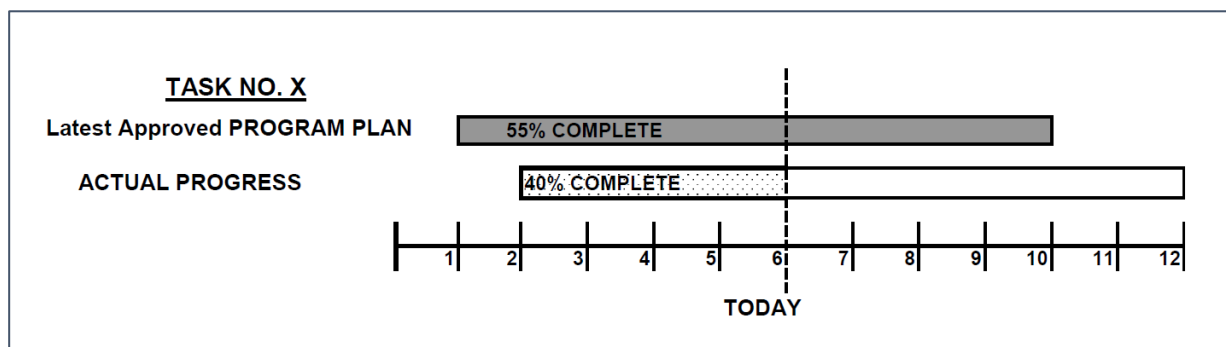


Fig. 4: Program Schedule Status and Plan (compared to latest approved Program Plan) for a Specific Task

## 8. Status of Milestones and Deliverables

Using Table 20 , below, list the milestones attained and the deliverables available this reporting segment resulting from progress in the Program **during previous segments and during this segment**. In addition, list the milestones and deliverables that represent significant deviation (lag) in their scope and due dates from the most recently updated plan, and explain the reasons for the deviations.

Note: The template of Table 20, below, is available in the WORD **File #5 – EC Semi-Annual Technical Report (TR) Template**, which can be downloaded from the EC website <https://us-isr-energycenter.org/guidelines-forms/>. (Add or delete table rows as needed).

#	Milestones Attained in Previous Segments (Definition / Description)	Attained Milestone Date (MM/YY)
1		
2		



#	<b><u>Deliverables Available in Previous Segments</u></b> (Definition / Description)	<b>Available Deliverable Date (MM/YY)</b>
1		
2		
#	<b><u>Milestones Attained in This Segment</u></b> (Definition / Description)	<b>Attained Milestone Date (MM/YY)</b>
1		
2		
#	<b><u>Deliverables Available in This Segment</u></b> (Definition / Description)	<b>Available Deliverable Date (MM/YY)</b>
1		
2		
#	<b><u>Milestones Planned for <u>but Not yet Attained in This Segment</u></u></b> (Definition / Description and reasons for the lag)	<b>Most Recently Planned Milestone Date (MM/YY)</b>
1		
2		
#	<b><u>Deliverables Planned for <u>but Not yet Available in This Segment</u></u></b> (Definition / Description and reasons for the lag)	<b>Most Recently Planned Deliverable Date (MM/YY)</b>
1		
2		

Table 20: Status of Milestones and Deliverables in the Semi-Annual Reporting Period

Using Table 21, below, list the milestones to be attained and the deliverables planned **for the next Program segment**, together with their most recently planned and updated due dates.

Note: The template of Table 21, below, is available in the WORD **File #5 – EC Semi-Annual Technical Report (TR) Template**, which can be downloaded from the EC website <https://us-isr-energycenter.org/guidelines-forms/>. (Add or delete table rows as needed).

#	Milestones Planned <u>for the Next Segment</u> (Definition / Description)	Most Recently Planned Milestone Date (MM/YY)	Newly Updated Milestone Date (MM/YY)
1			
2			
#	Deliverables Planned <u>for the Next Segment</u> (Definition / Description)	Most Recently Planned Deliverable Date (MM/YY)	Newly Updated Deliverable Date (MM/YY)
1			
2			

Table 21: Milestones to be Attained and the Deliverables Planned for the Next Semi-Annual Program Segment

#### 9. Plans for Next Semi-Annual Program Segment

Show, on a **task-by-task basis**, the plan for the next semi-annual Program segment. Describe and justify any rescheduling or additions to activities on the Program Plan for the next Program segment and indicate which, if any, of the originally planned activities or tasks are being terminated or redirected. Discuss the impact that rescheduled activities are likely to have on the original Program Plan during the next semi-annual Program segment and if additional time will be needed to complete the Program.

Note: *If additional time is needed to complete any specific task, a separate written request should be jointly submitted by the ILL and USL, stating the justification for the request and the number of months requested. Reference could be made to the Program status and plans described in detail in this TR.*

#### 10. Cooperation between the Consortium Members (CMs)

Discuss the **communication and coordination** activities conducted during the reporting segment that have enabled the CMs to keep abreast of each other's progress, especially between the ILL and the USL. Has the division of tasks or responsibilities between the ILL and the USL been integrated to mutual benefit? Any problems that have developed in this regard should be noted, along with details of corrective measures that have been taken or are planned.

#### 11. Risk Analysis

Using the instructions and the form in Table 22, below, please insert here (a) the Risk Analysis tables as were presented in the Program Proposal, and (b) the **updated** Risk Analysis tables, depicting the current Program situation (in this semi-annual period). Add **explanations** to the differences between the risk level in the original (Proposal related) and the current (this semi-annual period).

Note: *The template of Table 22, below, is available in the WORD **File #5 - EC Semi-Annual Technical Report (TR) Template**, which can be downloaded from the EC website <https://us-isr-energycenter.org/guidelines-forms/>.*

## 12. Market and Commercialization Plans

Identify any important changes in the Consortium's target markets or its plans for commercialization that have developed during the semi-annual segment covered by the report. Explain such developments and the possible impact they will have on the overall development Program Plan and budget and on the overall commercialization plans, in terms of potential market size, market share and sales forecast.

## 13. Published Information

Attach copies of articles written in the professional literature and any press releases related directly to the Program. Attach a copy of any reprint (not submitted in a previous report) that is based, in whole or in part, on the work conducted on the EC Program. Include a report on any inventions or patents filed. Technical and user manuals do not have to be submitted.

## **Risk Analysis**

In Proposal (check): \_\_\_\_\_

In Current Semi-Annual Period #: \_\_\_\_\_

<b>Risk #</b>	<b>Name/Description</b>	<b>Type*</b>
1		
2		
3		
4		
5		

<b>Risk #</b>	<b>Name/Description</b>	<b>Ranking</b>	<b>Impact</b>		
			<b>Duration<sup>1</sup></b>	<b>Budget<sup>2</sup></b>	<b>Commercialization Potential<sup>3</sup></b>
1					
2					
3					
4					
5					

\*Type: Technical (T), Project Management/Resources (M), External to the Project (E)

<b>Ranking</b>	<b>Probability of Risk Occurring</b>
High	Above 50%
Medium	30 – 49%
Low	10 – 29%
Very Low	1 – 10%

<b>Impact</b>	<b>Duration<sup>1</sup></b>
High	Above 12 months
Medium	6 to 9 months
Low	Below 6 months

<b>Impact</b>	<b>Budget<sup>2</sup></b>
High	Above 20% increase
Medium	10% to 20% increase
Low	Below 10% increase

<b>Impact</b>	<b>Commercialization Potential<sup>3</sup></b>
High	Above 50%
Medium	30% to 50%
Low	1% to 29%

1. Duration of project extended by the given amount
2. Cost of project increases by the given percentage
3. Forecasted sales in the next 3 or 5 years reduced by the given percentage

Table 22: Risk Analysis Tables

## 9.3 Fiscal Reports

### 9.3.1 Introduction to Fiscal Reports by each CM (FRM)

Each and every CM in the Consortium (including the ILL / USL, which are also CMs) is required to prepare a periodic (semi-annual) **Fiscal Report (FRM)** and submit it to the ILL / USL, accordingly. The FRM is a **tabular, itemized accountability** of the actual expenditures incurred by the CM during the specific (semi-annual) period within the Program, based on accounting records maintained by the CM for recording all the Program's expenditures.

The 1<sup>st</sup> periodic (semi-annual) FRM covers the segment period starting from the Program's **Effective Date** to the end of the **first 6 (six) months** of the Program. The FRM must be submitted to the ILL / USL by each CM within 3 weeks from the end of the segment period. The 2<sup>nd</sup> and subsequent FRMs follow the same time sequence.

The FRM also includes a **summary**, referred to as the **FRM Cover Page**, (see Table 23, below), which includes:

- The cumulative actual expenditures by the CM since the **Effective Date**, classified by type of expenditure;
- The updated budget of the CM from the Effective Date to **2 years** forward, classified by type (category) of expenditure and referred to as the **Approved Program Budget (APB)**;
- A comparison of the **cumulative actual expenditures** to the **updated APB**, classified by type of expenditure (actual expenditures as % of budget).

The purpose of the CMs Fiscal Reports (FRMs) is to enable the ILL / USL and the EC to monitor **actual expenditures** of the Program and to assist in decisions relating to the continued funding of the Program. Accordingly, FRMs should be submitted **every six months**, even if the actual expenditures incurred by a CM are below budget during the reporting segment.

The FRMs must be prepared and submitted by each CM to the ILL / USL using a specific **Excel-based workbook file** called "File #6 – EC Semi-Annual Fiscal Report for a CM.xlsx", which can be downloaded from the EC website at <https://us-isr-energycenter.org/guidelines-forms/>. Detailed explanations on the outline, the content and the filling-out instructions of the FRM is given in Section 9.3.3, below.

The periodic (semi-annual) FRM's are submitted to the respective ILL / USL, who's responsibility will be to **receive them on-time and review them for completeness and accuracy**, (see Section 9.3.2, below) and, subsequently, to upload them to the EC website, usually only for record-keeping purpose.

**Note:** *Other than in unforeseen, **exceptional** cases, the EC will not manage or review the individual FRMs submitted on a semi-annual basis. The monitoring, review, management and consolidation (for reporting purposes to the EC) of the FRMs will be under the responsibility of the ILL / USL.*

All expenses incurred by each CM in the EC-supported Program must be **classified** by expense type (category), just like in the **APB** (initially included in Annex A of the ECFA), and they must be **itemized**. Expenditures in all categories should be shown and **compared** with the most updated APB.

An expenditure is recognized on an **accrual basis** (when the expense is incurred), provided that payment is made within the standard credit terms received by the organization, or at the latest, by the date of the EC's audit of the FRMs.

### 9.3.2 Introduction to Consolidated Fiscal Reports by the ILL / USL (FRL)

The Consortium's ILL / USL are required to prepare, each one **separately**, a periodic (semi-annual) **Fiscal Report (FRL)** and submit it to the EC. The FRL is a **tabular summary** of the consolidated actual expenditures incurred by all the IL or the U.S. CMs, respectively, during the specific (semi-annual) period within the Program, classified by expense type (category). They are based on accounting records maintained by the CMs for recording all the Program's expenditures and their required periodic reporting to the ILL / USL through their Fiscal Report (**FRMs**), (with copies to the EC). The main purpose of the FRLs is to enable the EC to monitor **actual expenditures** of the Program and to assist in decisions relating to the continued funding of the Program.

The FRL must be submitted to the EC by the ILL / USL within 1 month from the end of the semi-annual reporting period, together with the semi-annual **Technical Report (TR)** of the Consortium

The FRL is a **single-page** report (see Table 30, below), which includes:

- The **consolidated cumulative actual expenditures** of **all** the IL / US CMs since the Effective Date, classified by type (category) of expenditure;
- An updated IL / US Budget starting from the Effective Date to 2 years forward, classified by type of expenditure and referred to as the **Approved Program Budget (APB)**;
- A comparison of the IL/US **consolidated** cumulative actual expenditures to the updated APB, classified by type of expenditure (actual expenditures as % of budget).

The FRLs must be prepared and submitted by the ILL / USL using a specific **Excel-based worksheet file** called "File #7 – EC Semi-Annual Consolidated Fiscal Report.xlsx", which can be downloaded from the EC website at <https://us-isr-energycenter.org/guidelines-forms/>. The FRL is a **one-page** summary report which is generated by **automatic consolidation** of the Cover Page summary table of all respective FRMs. Detailed explanations on the outline, the content and the preparation instructions of the FRL is given in Section 9.3.4, below.

The EC recognizes expense variations from the APB of up to **15%**, without a specific request, between any major budget categories, i.e., Direct Labor, Subcontractors, Consultants, etc. However, at any stage during the course of the Program, should the CMs under the ILL / USL incur expenditures in a category for which no budget exists, or should the actual **consolidated** expenses relating to any budget category be expected to exceed the budget for that category by more than 15%, and the ILL / USL wants the EC to recognize these expenses in place of under-spending in other Budget categories, then a **request for an amendment to the Budget** must be submitted (please see Section 9.4.2, ahead). This request should be substantiated by clear and complete explanations and must be submitted by the ILL / USL for approval by the EC, together with a revised budget.

### 9.3.3 Outline and Contents of Semi-Annual FRMs prepared by the CMs

The following sub-sections present detailed explanations of the outline, the content and the filling-out instructions of the FRM to be prepared by each CM, which are all Excel spreadsheets (tabs) of the workbook "File #6 – EC Semi-Annual CM Fiscal Report.xlsx", which can be downloaded from the EC website at <https://us-isr-energycenter.org/guidelines-forms/>.

**Note:** *Input cells throughout the workbook "File #6 – EC Semi-Annual CM Fiscal Report.xlsx" are **highlighted in yellow**. All other content of any of the workbook's spreadsheets (tabs) are either textual information or calculated data, which are all **write-protected**.*

Note: *Except in the Cover Page (see below), the **input rows** in all subsequent spreadsheets (tabs) can be **either reduced or expanded**, as needed.*

### 9.3.3.1 The Cover Page (Summary)

The Cover Page is a **summary** of all subsequent spreadsheets in the FRM. An example is given in Table 23, below. Whenever needed, it can be **copied or printed** as a hardcopy. The following information has to be filled-out in the Cover Page:

Fiscal Report - Standard Cover Page (separate report required for each CM)																												
EC REF. NO.:		Ref #1																										
TO: U.S. - IL Energy Center																												
PROGRAM TITLE:																												
Program 1																												
COUNTRY: (IL or U.S.)		IL																										
ORGANIZATION NAME:		Organization 1																										
TYPE OF REPORT: (Interim; Final)		Interim	Segment #:	2																								
REPORTING SEGMENT PERIOD COVERED (dd/mm/yy):		From: 01/07/2020	To:	31/12/2020																								
PROGRAM START DATE (dd/mm/yy):		01/01/2020	Number of months in segment:	6.0																								
CUMULATIVE UPDATED APPROVED BUDGET PERIOD (dd/mm/yy):		From: 01/01/2020	To:	31/12/2021																								
		Number of years in Cumulative Budget:		2.0																								
EXPENDITURE:	CUMULATIVE ACTUAL EXPENDITURES (\$)	CUMULATIVE UPDATED APPROVED BUDGET (\$)	Actual, as % of Budget																									
Direct Labor	90,000	200,000																										
Labor Overhead	22,500	50,000																										
Total Direct Labor	112,500	250,000	45.0%																									
Equipment (Purchased & Leased)	150,000	320,000	46.9%																									
Materials & Supplies	90,000	190,000	47.4%																									
Travel: Foreign	18,000	30,000																										
Domestic	1,800	4,000																										
	19,800	34,000	58.2%																									
Subcontracts	30,000	70,000	42.9%																									
Consultants	15,000	25,000	60.0%																									
Other Expenses	50,000	63,381	78.9%																									
Total Expenditures	467,300	952,381	49.1%																									
G&A overhead	23,365	47,619	49.1%																									
Total Organization Expenditure	490,665	1,000,000	49.1%																									
<p>We confirm that this report is prepared from separate accounting records maintained for recording the entire Program expenditures. The Program Manager's signature is his/her confirmation that all the listed items and expenditures were made by the organization within the framework of the Program.</p> <p>Printed name and signature:</p> <table style="width: 100%;"> <tr> <th style="width: 33%;">Organization's Program Manager</th> <th style="width: 33%;">Organization's Accounting Official</th> <th style="width: 33%;">Organization's Authorizing Official</th> </tr> <tr> <td style="height: 100px; vertical-align: bottom;"> <div style="border: 1px solid black; width: 100%; height: 100%; position: relative;"> <div style="position: absolute; bottom: 5px; right: 5px;">Signature 1</div> </div> </td> <td style="height: 100px; vertical-align: bottom;"> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> </td> <td style="height: 100px; vertical-align: bottom;"> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> </td> </tr> <tr> <td>Signature:</td> <td></td> <td></td> </tr> <tr> <td>Printed Name:</td> <td>Name 1</td> <td></td> </tr> <tr> <td>Title:</td> <td>Title 1</td> <td></td> </tr> <tr> <td>E-mail:</td> <td>Email 1</td> <td></td> </tr> <tr> <td>Telephone no.:</td> <td>Tel 1</td> <td></td> </tr> <tr> <td>Date Submitted (dd/mm/yy):</td> <td>Date 1</td> <td></td> </tr> </table>					Organization's Program Manager	Organization's Accounting Official	Organization's Authorizing Official	<div style="border: 1px solid black; width: 100%; height: 100%; position: relative;"> <div style="position: absolute; bottom: 5px; right: 5px;">Signature 1</div> </div>	<div style="border: 1px solid black; width: 100%; height: 100%;"></div>	<div style="border: 1px solid black; width: 100%; height: 100%;"></div>	Signature:			Printed Name:	Name 1		Title:	Title 1		E-mail:	Email 1		Telephone no.:	Tel 1		Date Submitted (dd/mm/yy):	Date 1	
Organization's Program Manager	Organization's Accounting Official	Organization's Authorizing Official																										
<div style="border: 1px solid black; width: 100%; height: 100%; position: relative;"> <div style="position: absolute; bottom: 5px; right: 5px;">Signature 1</div> </div>	<div style="border: 1px solid black; width: 100%; height: 100%;"></div>	<div style="border: 1px solid black; width: 100%; height: 100%;"></div>																										
Signature:																												
Printed Name:	Name 1																											
Title:	Title 1																											
E-mail:	Email 1																											
Telephone no.:	Tel 1																											
Date Submitted (dd/mm/yy):	Date 1																											

Table 23: Example of the Cover Page form ("Cover Page" spreadsheet) of the FRM

- **EC Reference Number** – Assigned to the Program by the EC
- **Program Title** – As was given in the Proposal and as was and will be presented throughout all other Consortium reports
- **Country** – The country of the CM (IL or U.S. only)
- **Organization Name** – The name of the CM, as was given in the Proposal and as was and will be presented throughout all other Consortium reports.
- **Type of Report** – The report can be either: **Interim** - the periodic (semi-annual) FRM or **Final** – the last Fiscal Report of the Program, at its completion.
- **Segment #** - The number of the semi-annual reporting segment since the start of the Program.
- **Reporting Segment Period Covered** - The start and end dates (in dd/mm/yy format) of the reporting segment period.

***Note:** The start and end dates of each reporting segment should be the 1<sup>st</sup> day of the 1<sup>st</sup> month and the last day of the last month in the segment, accordingly.*

- **Program Start Date** – The Effective Date (in dd/mm/yy format) of the Program, as stated in the ECFA.
- **Cumulative updated Approved Budget Period** – The start date and the end date (in dd/mm/yy format) of the period covered by the **APB of the CM**.

***Note:** The start date of the APB is the Effective Date. The end date of the APB is up to 2 years after the end date of the reporting segment covered in the FRM.*

The components of the cumulative actual expenditures and of the ABP are **automatically transferred** from other FRM spreadsheets (see below), calculated and compared in the boxed table of the Cover Page. It is **write-protected**.

When completed, the FRM has to be **authorized and signed** by the following persons in the Organization (the same person can represent more than one of the following 3 positions):

- a) Organization's Program Manager
- b) Organization's Accounting Official
- c) Organization's Authorizing Official

#### 9.3.3.2 (I) Direct Labor

Direct Labor expenditures are listed in the "Direct Labor" spreadsheet of the FRM, an example of which is given in Table 24, below. The info to be filled-out for each **employee** in the Organization who took part in the Program thus far is:

1. **Name of Employee** – as listed in the APB. If it is a different employee, substituting for the employee listed in the APB, the name of the substituted employee should be listed in parenthesis.
2. **Profession** – as listed in the APB.
3. **No. of Months during which Time was Spent on Program** – The number of months (including portions of a month) in which the employee spent time on the Program during the reporting segment.
4. **% Time on Program** – The percentage of the time spent on the Program by the employee during the number of months reported under (3) above, calculated by dividing the **actual hours** spent on the Program by the total hours worked in (3) above



plus vacation and sick leave time. The percentage time reported needs to be based on a Program's **time monitoring system** and duly authorized by the Project Manager.

EC REF. NO.: <u>Ref #1</u>				For the reporting period from: <u>01/07/2020</u>			Through: <u>31/12/2020</u>			
				Number of months in segment: <u>6.0</u>						
I. DIRECT LABOR										
Name of Employee	Profession	THIS REPORTING SEGMENT					Total Previously Reported	Cumulative <b>Actual Expenditures</b> to date	Cumulative Updated Approved <b>Budget</b>	
		No. of months during which time was spent on Program	% Time * on Program	Gross Salary during Months Worked	Social Benefits during Months Worked	Total Charged to Program				
			%	\$	\$	\$	\$	\$	\$	
Employee 1	Profession 1	5.0	90%	40,000	10,000	50,000	40,000	90,000	200,000	
						-		-		
						-		-		
						-		-		
				Total Expenditure		\$	50,000	40,000	90,000	200,000
				Overhead (%):		\$	12,500	10,000	22,500	50,000
				<b>TOTAL</b>		\$	62,500	50,000	112,500	250,000

\* % time on project within number of months during which time was spent on Program

Table 24: Example of the Direct Labor form ("Direct Labor" spreadsheet) of the FRM

5. Gross Salary during Months Worked - The total \$ amount shown in the payroll information for the employee during the months reported in (3) above.
6. Social Benefits during Months Worked - The payments of social benefits made by the Organization during the months reported in (3) above on behalf of the employee, including inter alia payroll taxes, **pension, medical & group life insurance, etc.** In addition, at the end of each reporting segment, the value of the **vacation time** due to each employee during the months reported in (3) above, as well as the value of the **sick time** actually paid, should be calculated and added to the social benefits.
7. Total Charged to Program – The calculated sum of (5) and (6) above, multiplied by (4) above.
8. Total Previously Reported – The \$ amount reported in the "Cumulative Actual Expenditures to date" column (9) of the FRM submitted for the previous segment period.
9. Cumulative Actual Expenditures to Date – The calculated sum of (7) and (8) above.
10. Cumulative Updated Approved Budget – The \$ amount budgeted for the specific employee (or the replacement employee) in the latest (updated) Approved Program Budget (APB) of the CM.

Note: Columns (8) through (10) above are listed in all expenditure categories in subsequent FRM spreadsheets and have the same explanation as above.

### 9.3.3.3 Labor Overhead

Labor Overhead is calculated in the "Direct Labor" spreadsheet of the FRM as a **% of total Direct Labor** and added automatically to the values in items (7) through (10) in Section 9.3.3.2, above, as illustrated in Table 24, above. Although the Labor Overhead percentage is an input field that can be filled out, the default (standard) Labor Overhead percentage is **25%**.

Note: The approved Labor Overhead percentage, if different from 25%, must be the same as the Labor Overhead percentage of the **APB**.

#### 9.3.3.4 (IIa) Purchased Equipment

Purchased Equipment is listed in the “Equip and Mat” spreadsheet of the FRM, an example of which is given in Table 25, below.

- As in the APB, only **Depreciation Allowance** on the Purchased Equipment incurred over the duration of the Program will be **recognized**, at a rate of **33.3% per year**.
- **Used equipment** that has been purchased prior to the Program’s Effective Date is also recognized as a Depreciation Allowance expense on the remaining economic life of the equipment, at the same rate as above.
- An itemized list must be included in the FRM for each purchased equipment showing:
  1. Date of purchase of equipment
  2. Purchase price
  3. No. of months (including portions of a month) used on the Program during the reporting segment
  4. Percentage of time used on the Program within the number of months listed in (3) above.
  5. Total Charged to Program – The **Depreciation** Allowance for the Purchased Equipment item during the reporting segment, automatically calculated as follows:  
 $\text{Purchase price (2 above)} \times \text{\# of months (3 above)} / 12 \times 0.333 \times \% \text{ used on Program (4 above)}$
- See Section 9.3.3.11, below for the explanation on the “Working Sheet” available in the “File #6 – EC Semi-Annual CM Fiscal Report.xlsx” workbook to manage the detailed listing of Purchased Equipment expenditures in the reporting segment.

#### 9.3.3.5 (IIb) Leased Equipment

Leased Equipment is listed in the “Equip and Mat” spreadsheet of the FRM, an example of which is given in Table 25, below. An itemized list must be included in the FRM for each leased equipment showing:

1. Monthly lease cost (in \$/units/month)
2. Number of Units leased
3. No. of months (including portions of a month) used on the Program during the reporting segment
4. Percentage of time used on the Program within the number of months listed in (3) above.
5. Total Leasing Cost – A value automatically calculated as follows:  $\text{Lease cost (1 above)} \times \text{\# of units (2 above)} \times \text{\# of months (3 above)} \times \% \text{ used on Program (4 above)}$

#### 9.3.3.6 (III) Expendable Materials and Supplies

Expendable Materials and Supplies are listed in the “Equip and Mat” spreadsheet of the FRM, an example of which is given in Table 25, below.

See Section 9.3.3.11, below for the explanation on the “Working Sheet” available in the “File #6 – EC Semi-Annual CM Fiscal Report.xlsx” workbook to manage the detailed listing of Expendable Materials and Supplies expenditures in the reporting segment.

Energy Center Procedures Handbook  
Version F8, July 28, 2020

EC REF. NO.: _____		Ref #1 _____		For the reporting period from: _____			01/07/2020		Through: 31/12/2020	
				Number of months in segment: _____			6.0			
IIa. PURCHASED EQUIPMENT (*)										
Description of Purchased Equipment		Date of Purchase	Purchase Price	No. of Months used on Program During Segment	Percentage of Time Used on Program	Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget	
		dd/mm/yy	\$		%	\$	\$	\$	\$	
Equipment 1		01/07/2020	200,000	3.0	100%	16,650	13,350	30,000	70,000	
						-		-		
						-		-		
(*) The annual depreciation rate for all equipment types is 33.3%				TOTAL	\$	16,650	13,350	30,000	70,000	
IIb. LEASED EQUIPMENT										
Description of Leased Equipment		Monthly Lease Cost	No. of Units	No. of Months used on Program During Segment	Percentage of Time Used on Program	Total Leasing Cost	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget	
		\$/unit/mo			%	\$	\$	\$	\$	
Leased Equipment 1		1,000	10	2.0	100%	20,000	100,000	120,000	250,000	
						-		-		
				TOTAL	\$	20,000	100,000	120,000	250,000	
III. EXPENDABLE MATERIALS AND SUPPLIES										
Description of Expendable Materials & Supplies Sub-Categories						Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget	
						\$	\$	\$	\$	
Materials 1						50,000	40,000	90,000	190,000	
								-		
								-		
				TOTAL	\$	50,000	40,000	90,000	190,000	

Table 25: Example of the Purchased and Leased Equipment, Expendable Materials and Supplies form ("Equip and Mat" spreadsheet) of the FRM

#### 9.3.3.7 (IV) Travel

Travel expenditures (both Foreign and Domestic) are listed in the "Travel" spreadsheet of the FRM, an example of which is given in Table 26, below. Both Foreign and Domestic Travel must be reported with the following details:

1. Name of employee making the trip
2. Dates of travel (from / to)
3. Destination
4. A brief description of the objectives of the trip and its relation to the Program must be included in the trip expense report. The trip expense reports and vouchers substantiating the expenditure reported should be available at the Organization for inspection during auditing of the FRs.
5. The expenses generally accepted are the costs relating to:
  - a. Air tickets – for economy of business class travel only
  - b. Hotels
  - c. Car rental and other transport costs
  - d. Daily allowance for meals (rates need to be checked with the EC each year)
  - e. Business meals
  - f. Communication

#### 9.3.3.8 (V) Subcontracts and (VI) Consultants

Expenditures for Subcontracts and Consultants are listed in the "Subs & Cons" spreadsheet of the FRM, an example of which is given in Table 27, below.

See Section 9.3.3.11, below for the explanation on the "Working Sheet" available in the "File #6 – EC Semi-Annual CM Fiscal Report.xlsx" workbook to manage the detailed listing of Subcontracts and Consultants expenditures in the reporting segment.

Energy Center Procedures Handbook  
Version F8, July 28, 2020

EC REF. NO.:		Ref #1		For the reporting period from:		01/07/2020		Through:		31/12/2020	
				Number of months in segment:		6.0					
<b>IV. TRAVEL</b>											
<b>A) FOREIGN</b>											
Name of Person	Dates of Travel		Destination	Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget				
	from	to									
Person 1	01/08/2020	15/08/2020	Destination 1	8,000	10,000	18,000	30,000				
<b>TOTAL</b>				\$	8,000	10,000	18,000	30,000			
<b>B) DOMESTIC</b>											
Name of Person	Dates of Travel		Destination	Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget				
	from	to									
Person 2	15/10/2020	30/10/2020	Destination 2	1,000	800	1,800	4,000				
<b>TOTAL</b>				\$	1,000	800	1,800	4,000			

Table 26: Example of the Foreign and Domestic Travel form ("Travel" spreadsheet) of the FRM

EC REF. NO.:		Ref #1		For the reporting period from:		01/07/2020		Through:		31/12/2020	
				Number of months in segment:		6.0					
<b>V. SUBCONTRACTS</b>											
Name of Subcontractor	Service performed		Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget					
Subcontractor 1	Service 1		30,000	-	30,000	70,000					
<b>TOTAL</b>			\$	30,000	-	30,000	70,000				
<b>VI. CONSULTANTS</b>											
Name of Consultant	Service performed		Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget					
Consultant 1	Service 2		5,000	10,000	15,000	25,000					
<b>TOTAL</b>			\$	5,000	10,000	15,000	25,000				

Table 27: Example of the Subcontracts and Consultants form ("Subs & Cons" spreadsheet) of the FRM

### 9.3.3.9 (VII) Other Expenses

Other expenses incurred in the reporting segment are listed in the "Other" spreadsheet of the FRM, an example of which is given in Table 28, below.

See Section 9.3.3.11, below for the explanation on the "Working Sheet" available in the "File #6 – EC Semi-Annual CM Fiscal Report.xlsx" workbook to manage the detailed listing of Other expenditures in the reporting segment.

Energy Center Procedures Handbook  
Version F8, July 28, 2020

EC REF. NO.:	Ref #1	For the reporting period from:	01/07/2020	Through:	31/12/2020
		Number of months in segment:	6.0		
<b>VII. OTHER EXPENSES</b>					
Name of Supplier	Description of Expenditure	Total Charged to Program	Total Previously Reported	Cumulative Actual Expenditures to date	Cumulative Updated Approved Budget
		\$	\$	\$	\$
Supplier 1	Other Expenditure 1	15,000	35,000	50,000	63,381
				-	
<b>TOTAL \$</b>		15,000	35,000	50,000	63,381
Total Expenditures (\$)		208,150	259,150	467,300	952,381
G&A (%): 5.0%		10,408	12,958	23,365	47,619
<b>PROGRAM TOTAL (\$)</b>		218,558	272,108	490,665	1,000,000

Table 28: Example of the “Other Expenses” form (“Other” spreadsheet) of the FRM

### 9.3.3.10 G&A Overhead

General & Administrative (G&A) Overhead is calculated in the “Other” spreadsheet of the FRM as a % of Total Expenditures and added automatically to the values in (a) Total Charged to Program, (b) Total Previously Reported, (c) Cumulative Actual Expenditures to Date, and (d) Cumulative Updated Approved Budget, as illustrated in Table 28, above. Although the G&A Overhead percentage is an input field that can be filled out, the default (standard) G&A Overhead percentage is **5%**.

Note: The approved G&A Overhead percentage, if different from 5%, must be the same as the G&A Overhead percentage of the **APB**.

### 9.3.3.11 Working Sheets for the Fiscal Report (FRM)

A separate Working Sheet needs to be submitted for the following budget types (categories):

Name of Budget Type (Category)	Name of Excel Worksheet in “File #6 – EC Semi-Annual CM Fiscal Report.xlsx”
(IIa) Purchased Equipment	Supp Sch-Equipment
(III) Expendable Materials & Supplies	Supp Sch-Materials
(V) Subcontracts	Supp Sch-Subcontractors
(VI) Consultants	Supp Sch-Consultants
(VII) Other Expenses	Supp Sch-Other Expenses

Within the Working Sheet for a specific budget type (category), the details of the invoices relating to **each sub-category** must be reported in separate schedules, as shown in the example of a Working Sheet in Table 29, below. The following guidelines should be followed in itemizing expenses:

<b>WORKING SHEET FOR FISCAL REPORT TO ENERGY CENTER</b> (Please use a separate page for each budget type)					
<b>ORGANIZATION NAME:</b> <u>Organization 1</u>					
<b>REPORTING SEGMENT PERIOD:</b> <b>From:</b> <u>01/07/2020</u> <b>Through:</b> <u>31/12/2020</u>					
<b>BUDGET ITEM:</b> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><b>Materials</b></div>					
<b>Name of sub-category (taken from budget) :</b> <u>Material 1</u>					
<b>Name of Supplier / Contractor</b>	<b>Date of Invoice</b>	<b>Invoice Number</b>	<b>Date of Payment</b>	<b>Check or Transfer No.</b>	<b>Amount \$</b>
Supplier 1	15/08/2020	12345	30/08/2020	54321	3,459
<b>TOTAL</b>					3,459
<b>Name of sub-category (taken from budget) :</b> <u>Material 2</u>					
<b>Name of Supplier / Contractor</b>	<b>Date of Invoice</b>	<b>Invoice Number</b>	<b>Date of Payment</b>	<b>Check or Transfer No.</b>	<b>Amount \$</b>
Supplier 2	10/10/2020	54321	30/10/2020	12345	5,478
<b>TOTAL</b>					5,478

Table 29: Example of a Working Sheet listing detailed actual expenses of budget sub-categories

- The total Dollar amount for each sub-category must be the same as the amount reported for that sub-category in the FRM, in the column headed “Total Charged to Project”. (This total amount is not transferred automatically to the FRM.)
- The expenses reported must be itemized in accordance with the budget (APB).
- Documentation requirements for budget categories listed above are as follows:
  - ✓ Proof of relating to the Program – the Program **name or number** must be indicated on relevant purchase requisitions, purchase orders or invoices, together with the **signature** of the Program Manager, approving such allocation. Where specific agreements have been signed, e.g., with **subcontractors or consultants**, a copy should also be available for inspection.
  - ✓ Proof of payment – a copy of the check or bank transfer must be provided.
- All documentation for all categories of expenditures must be available at the Organization for inspection **during auditing** of the FRM.

#### 9.3.4 The Consolidated Fiscal Reports by the ILL / USL (FRL)

The following sub-sections present detailed explanations of the outline, the content and the preparation instructions of the FRL introduced in Section 9.3.2 above, to be prepared by the ILL / USL (one FRL each) **every semi-annual segment period**. It is an **Excel Workbook** named “File #7 – EC Semi-Annual Consolidated Fiscal Report.xlsx”, which can also be downloaded from the EC website at <https://us-isr-energycenter.org/guidelines-forms/>.

Note: *Input cells throughout the workbook “File #7 – EC Semi-Annual Consolidated Fiscal Report.xlsx” are **highlighted in yellow**. All other content of the workbook is either textual information or calculated data, which are all **write-protected**.*

#### 9.3.4.1 Outline and Content of the FRL

The FRL is a **single page report**, very similar in outline and content to the **FRM “Cover Page”** (see Table 23, above), an example of which is given in Table 30, below:

As can be seen from Table 30, the one-page FRL is divided into 3 main sections:

Section A – (upper section) Contains the **identification** of the Consortium, the ILL / USL and the fiscal reporting segment period.

The information in this section is filled-out automatically. It is **transferred entirely** from the **Cover Page of the FRM** prepared by the ILL / USL (**in the capacity of a CM**). Thus, if there's any need for a change / update in any of the filled-out cells in this section, it should be done by changing the respective input cell in the FRM.

Section B – (middle section) Contains the **summary** of both the consolidated cumulative actual expenses and of the budget, and comparison between them, as described in Section 9.3.2, above.

The itemized consolidated cumulative **actual** expenses in this section are filled-out automatically. They are transferred entirely from the **Cover Page of the FRMs of all the CMs** (IL or US) and consolidated (summed-up).

The itemized consolidated cumulative updated **approved budget** components in this section are also filled-out automatically. They are transferred entirely from the **Cover Page of the FRMs of all the CMs** (IL or US) and consolidated (summed-up). However, the budget cells highlighted in **yellow** are not write-protected, and their automatically-generated values can be overridden manually by the ILL / USL, if needed.

Section C - (lower section) Contains the **contact info** and the authorization **signatures**.

When completed, the **FRL** has to be **signed** by the following persons in the ILL / USL Organization, after filling-out their contact info (highlighted in **yellow**):

- a) Organization's Program Manager
- b) Organization's Accounting Official
- c) Organization's Authorizing Official

Note: *The same person can represent more than one of the 3 positions above.*

#### 9.3.4.2 Preparation of the FRL

To prepare the periodic (semi-annual) FRL by the ILL / USL (two separate reports), the following instructions should be followed by the ILL / USL:

1. Store **your** FRM Excel file (“File #6 – EC Semi-Annual CM Fiscal Report.xlsx”) you've prepared in the capacity of a CM in **Drive D, Directory EC: E:\EC\** under the file name: **FR-LEAD.xlsx**
2. Store the FRM Excel files (“File #6 – EC Semi-Annual CM Fiscal Report.xlsx”) you've received from all CMs in your Country in **Drive D, Directory EC: E:\EC\**.
3. Rename the Excel files in (2) above to: **FR-CM2.xlsx, FR-CM3.xlsx, FR-CM4.xlsx, ... etc.**;

Energy Center Procedures Handbook  
Version F8, July 28, 2020

4. Download the Excel file “**File #7 – EC Semi-Annual Consolidated Fiscal Report.xlsx**” from the EC website at <https://us-isr-energycenter.org/guidelines-forms/> and store it the same directory as in (1) and (2), above: E:\EC\
5. Open / Run the Excel file “**File #7 – EC Semi-Annual Consolidated Fiscal Report.xlsx**” from (4). You should have the report FRL **generated automatically** (except for the contact info and the signatures (see Section 9.3.4.1, above).
6. Save a copy of the FRL generated in (5) above under **any chosen directory and file name**. If needed, **you can print** the one-page report.

Consolidated Fiscal Report of all Consortium Members, by Country (Prepared by IL or U.S. Program Lead)					
EC REF. NO.:		Ref #1			
TO: U.S. - IL Energy Center					
PROGRAM TITLE:					
Program 1					
COUNTRY: (IL or U.S.):		IL			
LEAD ORGANIZATION NAME:		Organization 1			
TYPE OF REPORT: (Interim; Final)		Interim		Segment #: 2	
REPORTING SEGMENT PERIOD COVERED (dd/mm/yy):		From: 01/07/2020		To: 31/12/2020	
PROGRAM START DATE (dd/mm/yy):		01/01/2020		Number of months in segment: 6.0	
CUMULATIVE UPDATED APPROVED BUDGET PERIOD (dd/mm/yy):		From: 01/01/2020		To: 31/12/2021	
				Number of years in Cumulative Budget: 2.0	

TOTAL EXPENDITURES of ALL CMs in COUNTRY	CONSOLIDATED CUMULATIVE ACTUAL EXPENDITURES (\$)	CONSOLIDATED CUMULATIVE UPDATED APPROVED BUDGET (\$)	Actual, as % of Budget
Direct Labor	180,000	400,000	
Labor Overhead	45,000	100,000	
<b>Total Direct Labor</b>	<b>225,000</b>	<b>500,000</b>	<b>45.0%</b>
Equipment (Purchased & Leased)	300,000	640,000	46.9%
Materials & Supplies	180,000	380,000	47.4%
Travel: Foreign	36,000	60,000	
Domestic	3,600	8,000	
<b>Subcontracts</b>	<b>60,000</b>	<b>140,000</b>	<b>42.9%</b>
<b>Consultants</b>	<b>30,000</b>	<b>50,000</b>	<b>60.0%</b>
<b>Other Expenses</b>	<b>100,000</b>	<b>126,762</b>	<b>78.9%</b>
<b>Total Expenditures before G&amp;A Overhead</b>	<b>934,600</b>	<b>1,904,762</b>	<b>49.1%</b>
<b>G&amp;A overhead</b>	<b>46,730</b>	<b>95,238</b>	<b>49.1%</b>
<b>Total Expenditures of all CMs</b>	<b>981,330</b>	<b>2,000,000</b>	<b>49.1%</b>
<b>ILL / USL Overhead Allowance (2.5%):</b>	<b>24,533</b>	<b>50,000</b>	<b>49.1%</b>
<b>Total ILL / USL Cumulative Expenditures</b>	<b>1,005,863</b>	<b>2,050,000</b>	<b>49.1%</b>

We confirm that this report is prepared from separate accounting records maintained for recording the entire Program expenditures. The Program Manager's signature is his/her confirmation that all the listed items and expenditures were made by the organization within the framework of the Program.

Printed name and signature:	Organization's Program Manager	Organization's Accounting Official	Organization's Authorizing Official
Signature:	<div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto;"></div> <div style="text-align: center; font-size: x-small;">Signature 1</div>	<div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto;"></div>	<div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto;"></div>
Printed Name:	Name 1		
Title:	Title 1		
E-mail:	email 1		
Telephone no.:	Tel. 1		
Date Submitted (dd/mm/yy):	31/12/2020		

Table 30: Example of a Consolidated Fiscal Report Signature Page (FRL) prepared by the ILL / USL



## 9.4 Annual Presentation and Program Update

### 9.4.1 The Annual Presentation (AP) to the EC

Once a year, the Consortium should prepare, submit and deliver an Annual Presentation (AP) to the EC. The plan is for representatives of the ILL / USL (together) to present this AP to the Energy Center Executive Committee (ECEC).

The AP should be submitted to the EC (by uploading to the EC upload system) within 7 weeks from the end date of the 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> 8<sup>th</sup> and 10<sup>th</sup> semi-annual reporting periods, and should be based on the TRs and FRs submitted by the Consortium for the 2 recent semi-annual periods.

The AP should be prepared as a **slide-presentation** of approximately 1 hour in duration, containing approximately 30-40 slides.

The AP should address the following main topic areas / issues:

#### For Year Just Ended:

- Main **objectives and tasks** planned and executed;
- Main **results and accomplishments** achieved;
- New **milestones** attained and **deliverables** available
- Description of the **cooperation** and **collaboration** between the Consortium Members (CMs)
- Any major R&D **difficulties / problems** or failures encountered

#### For the Next Two Years:

- Main anticipated R&D problems / difficulties / failures in the Consortium Program
- Any anticipated changes in the CMs participating in the Program
- Main anticipated changes in the content of planned **tasks** and or start / end dates of tasks (see Section 9.4.2, ahead)
- Revised **budgets** of any of the CMs, and the revised consolidated ILL / USL budgets (see Section 9.4.2, ahead).

### 9.4.2 Preparation of Updated Program GANTT and Budgets

Once a year, the ILL and the USL of the Consortium should prepare and submit to the EC for approval (each one separately), an updated **GANTT** and updated **Cumulative Budgets** for the next 2 years. For example:

- ✓ At the end of the 1<sup>st</sup> year of the Program, the updated GANTT and Cumulative Budgets should be for the first 3 years of the Program (for topic area #3, until the end of the 3 years Program)
- ✓ At the end of the 2<sup>nd</sup> year of the Program, the updated GANTT and Cumulative Budgets should be for the first 4 years of the Program (for topic area #3, until the end of the 3 years Program).

The updated Program GANTT and Budgets (see below) should be based on the following:

- The actual cumulative expenditures incurred in the past segments, as reported in previous **FRs**

- The anticipated changes in the GANTT and/or budgets of any of the CMs within the next 2 years, as reported in this year's AP (see Section 9.4.1, above).

The updated GANTT and Budgets should be submitted to the EC for review **and approval** (by uploading to the EC upload system) at the same time that the **AP** is submitted (within 7 weeks from the end date of the 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup> 8<sup>th</sup> and 10<sup>th</sup> semi-annual reporting periods; For topic area #3 - within 7 weeks from the end date of the 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> semi-annual reporting periods.)

The **Cumulative Budgets** that are updated and submitted for approval each year should be prepared by updating the same Excel Budget Files (#3 and #4) that were used to prepare and submit the Approved Program Budgets (APBs) that were appended as Annex A of the ECFA. In case they have to be re-created, they can be downloaded from the EC website: <https://us-isr-energycenter.org/guidelines-forms/> . They are:

- The **cumulative budgets of each one of the CMs**, using **file #3**. For guidelines on the CM budget preparation, see Section 7.14 of this Handbook, above.
- The **consolidated cumulative budgets of the ILL / USL** (each one separately), using **file #4**. For Instructions how to prepare these consolidated budgets, see Section 7.14.5 of this Handbook, above.

The request for changes in the GANTT and in the Budgets, whenever significant, should be reasoned / explained in writing and appended to the **AP**.

Once the updated cumulative budgets are approved by the EC, they become the **Approved Project Budgets (APB)** that are included in the **FRs** of the following 2 segments, for comparison with the actual cumulative expenditures.

## 9.5 Supplementary / Supporting Files for TR and FR Preparation

The list of supplementary / supporting files / templates for the preparation of the TR and FR, which can be downloaded from the EC website <https://us-isr-energycenter.org/guidelines-forms/> are given in Table 31, below:

File #	Report Generated	Function and Name of File
	TR / FR	EC – Procedures Handbook (reporting).pdf
5	TR	File #5 – EC Semi-Annual Technical Report (TR) Template.docx
6	FRM	File #6 – EC Semi-Annual CM Fiscal Report.xlsx
7	FRL	File #7 – EC Semi-Annual Consolidated Fiscal Report.xlsx

Table 31: List of supplementary / supporting files / templates for the preparation of the TR and FR