



THE NATIONAL CENTER FOR WORK-LEARNING-SERVICE & LEADERSHIP IN SUSTAINABILITY

AT FORT WINFIELD SCOTT

CONCEPT PROPOSAL

Submitted to:

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Submitted by:

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ABSTRACT: The Renewable Nations Institute seeks to develop The National Center for Work-Learning-Service and Leadership in Sustainability (National Center) at Fort Winfield Scott with the mission to accelerate the rate at which the U.S. education sector can collectively develop an energy services workforce with the capacity to address the challenges of climate change mitigation and adaptation, and reduce the national security risks and economic disruptions emerging from increasingly frequent extreme climate-related weather events. The proposed National Center—consisting of a consortium of university-based business and engineering schools, and instructional technology and energy research institutes, from across the United States—will feature a full-time-equivalent (FTE) enrollment of 3,525 students calculated as follows: 135 students in residency per semester, 330 commuter students, and 2,970 low-residency students in 33 cohorts of not-to-exceed 90 students. Student population on campus will not exceed 555 students at any given time. The National Center is projected to create ~804 direct and indirect jobs and stimulate up to ~\$200 billion in energy efficiency and renewable energy investments through 2040. The National Center will optimally have the indirect impact of doubling the American energy services workforce over the next two decades, as it seeks to replicate its distributed Work-Learning-Service model in ~300 universities across the United States. Fort Scott historic restoration and rehabilitation costs, including fixtures, furnishings and instructional technologies, are estimated at \$395,675,474. The National Center annual operating budget is projected at \$99,540,953. The National Center will achieve tuition-free Work-College status within 5 years based upon a Payback+5x5 revenue sharing energy services contract (ESCO) model, providing the ability to serve all Americans regardless of financial means.

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LIST OF ACRONYMS

ADL	Advanced Distributed Learning	L3C	Low-profit Limited Liability Company
ASEE	American Society for Engineering Education	LLNL	Lawrence Livermore National Laboratory
BART	San Francisco Bay Area Rapid Transit	MI	Millennium Institute
CapEx	Estimated Capital Expenditures	NAESCO	National Association of Energy Service Companies
CEO	Chief Operating Officer	NASA	National Aeronautics and Space Administration
CNHS	Coupled Natural and Human Systems	NHPA	National Historic Preservation Act
CO2	Carbon Dioxide	NOAA	National Oceanic and Atmospheric Administration
DOE	U.S. Department of Energy	NSF	National Science Foundation
DRC	Design Review Committee	O&M	Operations and Maintenance
EAEID	Energy Analysis and Environmental Impacts Division	ORNL	Oak Ridge National Laboratory
EIA	Energy Information Agency	PHEVs	Plug-in Hybrid Electric Vehicles
ERGAL	Renewable Energy Galapagos	QER	Quadrennial Energy Review
ESCO	Energy Services Contract	RIRs	Recommendation Implementation Rates
EVs	Electric Vehicles	SD Modeling	Systems Dynamic Modeling
FEMA	Federal Emergency Management Agency	SFMTA	San Francisco Municipal Transit Agency
FTE	Full-Time Equivalent	SPV	Special Purpose Vehicle
GHG	Greenhouse Gas	STEM	Science, Technology, Engineering and Mathematics
HIIs	High Impact Investments	T21	Threshold 21
HIOs	High Impact Opportunities	UNDP	United Nations Development Programme
IACs	U.S. Department of Energy Industry Assessment Centers	UNF	United Nations Foundation
IEA	International Energy Agency	UNFIP	United Nations Fund for International Partnerships
Institute	Renewable Nations Institute	USEER	U.S. Energy and Employment Report
IRS	Internal Revenue Service	V2G	Vehicle-to-Grid
IITTL	Institute for the Integration of Technology into Teaching and Learning	WEF	World Economic Forum
ITEST	Information Technology Experiences for Students and Teachers		

EXHIBITS

Exhibit A	Building Occupancy and Reuse, Conceptual Layout
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FOREWORD:

The foremost objective of the Renewable Nations Institute in this Concept Proposal is to assure that all Americans—directly or indirectly—have the opportunity to *serve in and/or be served by* the proposed National Center for Work-Learning-Service and Leadership in Sustainability at Fort Winfield Scott. This requires two project design principles: universal access and affordability.

Universal access is achieved by developing the proposed National Center as a “national distributed learning center.” Advanced Distributed Learning (ADL) instructional technologies are emerging as a non-centralized instructional model that allows teaching and learning to occur in combination with traditional classroom-based courses, or used to create entirely virtual classrooms and educational communities. The National Center will deploy ADL technologies under a professional workstation model to leverage the vast capacity of formal and informal educational communities nationwide to focus on the creation of solutions to solve seemingly intractable socioeconomic and environmental challenges.

To achieve universal access, the Renewable Nations Institute has teamed with the *Institute for the Integration of Technology into Teaching and Learning (IITTL)* of the University of North Texas (UNT) to co-lead the design of a national distributed learning platform and the development of National Center’s educational consortium. IITTL is chartered by the UNT Council of Deans to conduct research and implement best practices in the area of teaching and learning with technology. Gerald Knezek, Ph.D., the UNT Regents Professor of Learning Technologies and Director of the IITTL, is one of the Nation’s top leaders in the integration of technology in teaching and learning.

Affordability can be achieved at the National Center by self-generating revenue under the Renewable Nations Institute’s innovative Payback+5x5 revenue sharing energy services contract (ESCO) model. The Institute has selected AECOM to design, build, and provide maintenance and operations (O&M) services for the proposed National Center. AECOM has engineered or constructed about one-fourth of the generating power currently in use in the United States. As the proposed National Center becomes operational, the Institute will seek to further engage AECOM (and other national energy services companies) to oversee professional Work-Learning-Services aimed at developing and maintaining a portfolio of energy efficiency and renewable energy projects at an aggregate value of ~\$2.5 billion under the Institute’s Payback+5x5 ESCO model. This will generate revenue for the National Center of up to \$125 million annually within 3 to 5 years to achieve tuition-free status and to subsidize the replication of National Center services in up to 300 universities nationally.

To further provide access and affordability, the Institute is proposing to offer approximately 317 dedicated professional computer workstations and 228 classroom computer workstations at a low-cost sublease (or on a subsidy basis) for mission-aligned organizations and volunteers. This will allow up to ~1.9 million community service hours to support disaster recovery and enhance the delivery of social services to U.S. communities negatively impacted by increasingly frequent extreme climate-related weather events.

A final note: The Institute is cautious to assume that the use pattern of Fort Scott facilities as identified in Section 4, Adaptive Reuse Plan, and Section 5, Building-by-Building Reuse Profile, is the final statement of proposed use and/or campus density consistent with creating and maintaining a contemplative campus setting. The Institute, therefore, initially plans not-to-exceed a density of 815 administrators, faculty, staff and students on-site with a parking impact of not-to-exceed 355 vehicles, just over one half of the 610 parking space count as identified in the *Fort Scott Site & Landscape Improvement Strategy*. This reduces designated maximum occupancy at Fort Scott from 1,812 persons to 950 persons, 21% of total proposed project design capacity, including the visiting public. Optional use of Fort Scott facilities by mission-aligned organizations and volunteers will be determined once the Institute has had sufficient operational experience and planning approval from the Presidio Trust to permit additional occupancy density.

For the Development and Management Team,

Allan E. Baer
President & Chief Executive Officer
The Renewable Nations Institute

SECTION 1: EXECUTIVE SUMMARY

1.1. Vision Statement: The Global Challenge Award, Inc, d.b.a. The Renewable Nations Institute (hereinafter “Institute”), a Vermont-based, tax-exempt, non-profit 501(c)(3) corporation, is advancing a vision to repurpose Fort Winfield Scott as The National Center for Work-Learning-Service & Leadership in Sustainability (hereinafter “National Center”). The National Center is a proposed consortium-based, Work-College program with the goals to:

- (a) Accelerate the rate at which the U.S. education sector can collectively address the complex challenges of climate change mitigation and adaptation by educating the next generation of “Leaders in Sustainability,” and
- (b) Reduce the national security risks and socioeconomic disruptions emerging from increasingly frequent extreme climate-related weather events by providing ~1.9 million community service hours annually to improve disaster recovery coordination nationally in collaboration with government and civil society.

To achieve these goals, the Institute will establish a non-profit, university-based consortium (hereinafter “Consortium”), aggregate program-related and mission-driven investors, and engage qualified developers and contractors under a special purpose vehicle (SPV)—a Low-profit Limited Liability Company (L3C)—to plan, design, engineer, finance, construct, retrofit, furnish, equip and maintain Fort Scott for the Consortium to lease and operate the National Center for the benefit of the Nation.

1.2. Work-Learning-Service: The National Center will adopt U.S. Department of Education Work-College Program guidelines for Work-Learning-Service, which aims to help students learn a critical balance of study, community service and managed work expectations (GPO, 2018). Based on Constructivism and Constructionism—theories of human development that argue learning is most effective when it is part of an activity that the learner experiences as the construction of a meaningful “*work-product*” (Bada & Olusegun, 2015; Harel & Papert, 1991)—the Work-Learning-Service of the National Center will endeavor to help learners offer solutions to perceived problems that are derived from disciplined inquiry and contemplative reflection. The National Center will emphasize rigorous scientific inquiry, integrate scholarship with experiential learning, and promote a contemplative academic culture, as the failure to mitigate and adapt to a changing climate is an existential threat to humanity that requires thoughtful action informed by experience.

1.3. Work-Products/Deliverables: Under the supervision of senior faculty and industry project developers serving as adjunct faculty, graduate student interns and post-graduate fellows of the National Center will develop and maintain a portfolio of energy efficiency and renewable energy projects (*work-products*) at an aggregate value of ~\$2.5 billion under a Payback+5x5 revenue sharing energy services contract (ESCO) model. The Payback+5x5 ESCO model is designed to generate revenue for the National Center on the basis of 5% of annual avoided cost savings (or 5% of annual gross earnings of a renewable energy project) during the project payback term, plus 5% per annum for a minimum period of 5 years after the payback. This will generate revenue of up to \$125 million annually within 3 to 5 years to achieve tuition-free Work-College status and promote the replication of National Center services in up to 300 universities nationally.

1.4. Impact Statement: The National Center is projected to create ~804 direct and indirect jobs, and stimulate up to \$200 billion in U.S. investments in energy efficiency and renewable energy projects through 2040. As the Work-Learning-Service model is replicated nationally under Consortium sponsorship, the National Center may have the indirect impact of doubling the U.S. energy workforce over the next two decades. An estimated 1.1 million community service hours in disaster recovery coordination annually will improve recovery outcomes for millions of Americans (see Section 4.3, Use Profile and Impact).

1.5. Financial Abstract: Project expenditures of ~\$395,675,474 are budgeted as follows: (a) \$214,753,700 for the rehabilitation of 285,291 square feet (S.F.) of historic buildings as specified in Required Elements #2, #4 and #5, plus 21,500 S.F. in new construction for Optional Elements A and B (Presidio Trust RFCP 2018); (b) \$35,700,043 for site infrastructure; (c) \$42,840,051 for architectural, engineering and construction fees; (d) \$47,481,057 for Required Items #1, #3, #6 and #8 and Optional Elements C and D (Presidio Trust RFCP 2018); (e) \$23,246,585 for fixtures and furnishings; and (f) \$31,654,038 for operating reserves during Fort Scott redevelopment and construction phases. The annual operating budget for the National Center is projected at \$99,540,953. (All cost estimates are subject to change.)

SECTION 2: PROBLEM STATEMENT

2.1. Failure to Mitigate and Adapt to Climate Change: The World Economic Forum (WEF) Global Risk Report 2018 ranks “extreme weather events, natural disasters and failure of climate change mitigation and adaptation” as three of the top five global risks over a 10-year horizon both in terms of *likelihood and impact* (WEF, 2018). These rankings reflect the legitimate concern that the U.S. (and the global community) may fail to curtail greenhouse gas (GHG) emissions—specifically emissions of anthropogenic carbon dioxide (CO₂) from the burning of fossil fuels—within a time horizon sufficient to limit warming to below 2°C relative to pre-industrial levels, and may fail to achieve near zero emissions of CO₂ by the end of the 21st Century as recommended by the Intergovernmental Panel on Climate Change (IPCC, 2014).

2.2. Evidence of Growing Risk: Since 1980, the U.S. has sustained 230 climate-related weather events where damages have reached or exceeded \$1 billion (NOAA, 2018). The total cost of these climate-related weather events exceeds \$1.5 trillion, with the majority of costs having accrued since 2005. In 2017, the U.S. was impacted by 16 separate billion-dollar disaster events costing an estimated \$309.4 billion, which shattered the previous U.S. annual record cost of \$219.2 billion that occurred in 2005 (NOAA, 2018). The Federal Emergency Management Agency (FEMA) estimates that 47 million Americans (16 percent of the U.S. population) were affected by severe climate-related weather events in 2017 (NPR, 2018). Climate-related weather extremes are disrupting the complex drivers of Coupled Human and Natural Systems, stressing local communities and placing national economies at-risk. As the WEF Global Risk Report 2018 warns: “*When risk cascades through a complex system, the danger is not of incremental damage but of the interconnected systems of runaway collapse or an abrupt transition to a new, suboptimal status quo*” (WEF, 2018).

2.3. Workforce Development Challenge: The IPCC argues that multiple mitigation and adaptation pathways are *likely* to limit warming, provide greater resiliency and reduce the costs of climate-related weather impacts. However, all pathways require emissions reductions and infrastructure transformation strategies that pose significant technological, economic, social and institutional challenges (IPCC 2014). Chief among these challenges for the U.S., as identified in the 2017 U.S. Energy and Employment Report (USEER) of the U.S. Department of Energy (DOE), is the institutional scale to build the requisite human capacity to undertake climate change mitigation and adaptation while assuring national security and economic prosperity (USEER, 2017). This requires, among other needs, accelerated development and expansion of a workforce with the capacity to maintain legacy energy systems (e.g., hydropower, coal, nuclear and natural gas) while developing cross-disciplinary areas of expertise for energy systems transformation (e.g. energy efficiency, renewables, transmission, storage and distribution).

2.4. Supply-Side Workforce: USEER industry survey data indicate that ~6.4 million Americans are employed in the energy sector: ~1.9 million in the electricity generation and fuels; ~2.3 million in transmission, distribution, and storage; and ~2.2 million in the design, installation and manufacture of energy efficiency products and services (USEER, 2017). Key findings of the USEER are: (a) that within the next five years ~1.6 million industry employees (25% of the workforce) will become of retirement age; and (b) that 43% of the nation’s electric utilities have identified the aging workforce and the increased rate of retirements as the greatest challenges facing the industry (USEER, 2017). Compounding the workforce crisis is the finding by the Quadrennial Energy Review (QER) Task Force of the U.S. Department of Energy that by 2030 the supply-side energy sector overall will need to employ an additional ~1.5 million workers in engineering, construction, installation, maintenance and transportation, and ~200,000 workers with advanced computer and mathematics skills, to modernize the Nation’s grid infrastructure (QER, 2017).

2.5. Demand-Side Workforce: Workforce development for the demand-side commercial and industrial energy sectors are equally challenging. An industry survey conducted by the Oak Ridge National Laboratory (ORNL) of 60,000 general and operational managers in the U.S. exposed the need for human capacity building in energy management. Survey results indicated that only 1.7% of general and operational managers track energy data, set energy efficiency and renewable energy goals, and invest in projects; 15% sporadically track energy data but fail to set goals or invest; and 83% reported little to no knowledge of energy management (ORNL, 2011). According to the Bureau of Labor Statistics, there are ~2.2 million general and operational managers across the industrial and commercial energy end-use sectors in the U.S. (BLS, 2017). An estimated 2.1 million general and operational managers would benefit from greater knowledge of energy management.

2.6. Capacity Gap: Adding to the urgency of this crisis is the capacity gap as a result of declining enrollment in America’s university-based engineering schools across key energy engineering fields, especially electrical engineering. The American Society for Engineering Education (ASEE) publishes an annual survey—*Engineering By the Numbers*—profiling the number of students awarded engineering degrees in the U.S. at all academic levels. The ASEE reports that in 2014 and 2015, electrical engineering enrollment had increased above the previous enrollment peak of 20,116 students in 2006, after a period of decline from 2007 to 2013. (See Table 1, Electrical Engineering Degrees Awarded 2006-2015, below.) Enrollment for 2016 (not shown in Table 1) declined to 21,516 across all degree levels (ASEE, 2017). The ability for universities to recruit and retain engineering students for the energy workforce has not substantially improved in more than a decade.

Table 1: Electrical Engineering Degrees Awarded 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Bachelor	11,915	11,467	10,790	9,859	9,634	9,942	10,102	10,662	11,261	11,385
Masters	5,256	5,026	5,735	6,137	6,345	6,666	6,572	6,305	6,536	7,768
Ph.D.	<u>939</u>	<u>1,064</u>	<u>1,006</u>	<u>959</u>	<u>992</u>	<u>1,030</u>	<u>1,126</u>	<u>1,129</u>	<u>1,152</u>	<u>1,105</u>
Total	20,116	19,564	19,539	18,964	18,981	19,649	19,812	20,109	20,963	22,273

2.7. New Job-driven Training Strategies: Trends in the supply-side and demand-side energy workforce, combined with the capacity gap created by declining university enrollment in key energy engineering fields, could ostensibly compromise U.S. economic competitiveness, energy security and environmental responsibility. The QER Task Force calls for new job-driven training strategies reflecting the broader range of needed skills required to meet the energy services workforce development challenges of the future. (QER, 2017) The Task force further cites the need for several measures to improve workforce development, including but not limited to: (a) expanding training curricula to use the latest educational tools and techniques; (b) moving to a competency-based system of evaluating educational and training outcomes; (c) engaging new pools of potential talent (such as veterans); and (d) developing innovative methods to attract and train the energy infrastructure workforce of the future. (QER, 2017) The proposed National Center at Fort Winfield Scott will be a nationally coordinated response to this workforce development crisis.

SECTION 3: WORK-LEARNING-SERVICE

3.1. Work-Learning-Service Platform: The proposed National Center will adhere to U.S. Department of Education Work-College statutes under Title 34, Subtitle B, Chapter VI, Part 675, Subpart C, §675.41, which: (a) requires at least one-half of all students enrolled on a full-time basis to participate in a comprehensive Work-Learning-Service program for at least five hours each week, or at least 80 hours during each period of enrollment; (b) includes learning objectives, evaluation and a record of work performance as part of the student’s college record; (c) provides programmatic leadership by personnel at levels comparable to traditional academic programs; (d) recognizes the educational role of Work-Learning-Service supervisors; and (e) includes the consequences for student non-performance similar to the consequences in a regular academic program (GPO, 2018). Credit-bearing courses and degree-granting academic programs offered at the National Center will be managed by accredited academic members of the Consortium under a master articulation agreement governing the transfer of credits between Consortium members and/or other colleges and universities. The Institute will manage non-accredited, certificate programs, professional development services and Work-Learning-Service work-products (or deliverables).

3.2. Proof-of-Concept: The National Center seeks to develop and operate a Work-Learning-Service Consortium at Fort Scott partially modeled after the U.S. Department of Energy Industry Assessment Centers (IACs) Program. IACs, consisting of teams of faculty and students at participating university-based engineering schools, were created with the goal to reduce energy consumption in industrial facilities in response to rising energy costs and energy shortages due to the oil embargo of 1976. Since 1981, the IACs Program has conducted over 18,248 energy assessments and 138,320 associated recommendations at an implementation of 49.6%. In aggregate, faculty-student generated work-products of the IACs Program have (a) saved over 530 trillion BTUs of energy (the equivalent of the energy needs of 5.5 million American homes), (b) generated more than \$2.5

billion in energy services contract (ESCO) value, (c) achieved more than \$5.6 billion in avoided energy costs, and (d) created or saved more than 1.5 million jobs, which equates to ~600,000 jobs per \$1 billion invested (IACs, 2018). The IACs, a network of 28 university-based engineering schools, have placed more than 3,000 graduates in the energy services industry.

3.3. Methodology: Under the supervision of industry-based professional project developers—Work-Learning-Service supervisors serving as adjunct faculty—graduate student interns and post-graduate fellows of the National Center will collaborate in an industry workstation environment (“*Project Incubator*”) to develop and maintain a portfolio of energy efficiency and renewable energy projects at a value of ~\$2.5 billion. This model relies upon adjunct faculty sourced from industry partners of the National Center working remotely to identify qualified clients. Adjunct faculty in the field conduct Rapid Assessments of client facilities utilizing energy data benchmarked against known energy performance standards contained in a comprehensive National Center database—an aggregate of all known energy efficiency and renewable project performance data, including the IACs database. The client may then opt to retain National Center services on a Payback+5x5 energy services contract (ESCO) model, at which time the adjunct faculty member develops work-product specifications and courseware in collaboration with specialty teams of faculty and post-graduate fellows of the National Center with advanced engineering knowledge. Working remotely, but periodically residing on campus for instruction and supervision, the Work-Learning-Service supervisor becomes the “Adjunct Faculty of Record” for the full term of client engagement from project concept to commissioning and performance tracking. Financially qualified industry-based partner(s) of the National Center (from which the adjunct faculty are sourced) enter into a performance-based ESCO contract with the client, which contains a Payback+5x5 ESCO clause to the benefit of the National Center.

3.4. Curriculum Framework: Accredited academic consortium members will design instructional programs under the general curriculum framework, as described in Table 2, Curriculum Framework (Abridged), below:

Table 2: Curriculum Framework (Abridged)

G-1.01: Economics of clean energy technologies as a greenhouse gas (GHG) reduction strategy.	G-1.03: Systems optimization modeling to improve the energy intensity and productivity.	G-2.01: Energy resource mapping utilizing geospatial technologies and country data.	G-3.01: Multi-disciplinary, outcomes-based project management training.	G-3.03 Thesis or field project based upon the “case study” method combined with field research.
G-1.02: Methodologies for the permitting and licensing of renewable energy projects.	G-1.04: Case studies of policy mechanisms under various proposed Clean Development Mechanisms (CDMs).	G-2.02: Systems Dynamic Modeling as a method to assess the risks and benefits of alternative energy policies.	G-3.02: Advanced energy efficiency and renewable energy technologies.	G-3.04: Individualized tutorials focusing on public policy and/or clean energy technology with senior faculty approval.

3.5. Application of Curriculum Framework: The Work-Learning-Service curriculum framework will be managed by accredited academic Consortium members and applied across three core academic programs, as follows:

1. **Graduate Interns and Post-Graduate Fellows:** Graduate student interns and post-graduate fellows organized in cohorts determined by career objectives (business administration, energy engineering, environmental assessment, project finance, construction management, facility operations, etc.) will form the core student body in alignment with public and private sector stakeholder project development interests.
2. **Undergraduate Interns and Foundation Year Students:** Undergraduate students organized in cohorts by core academic interests (and a limited cohort of Foundation Year students) will form the core undergraduate student body in support of graduate interns and post-graduate fellows of the National Center.
3. **Professional Development:** Accredited and non-accredited certificate bearing courses utilizing a variety of formats (lectures, workshops, seminars, field surveys, etc.) will be offered for working professionals across multiple sectors, including academia, government, industry and civil society.

3.6. Curriculum Delivery: Accredited academic consortium members will design instructional programs under the general curriculum framework, as described in Section 3.4, Table 2, Curriculum Framework (Abridged), utilizing a variety of formats: lectures, workshops, seminars, field surveys, tutorials, traditional and non-traditional classroom and laboratory settings, residency and low-residency academic programming, and distance-learning. The National Center emphasizes Work-Learning-Service deliverables (**work-products**) that lead to investment-grade proposals for multi-stakeholder clients, but recognizes the importance of public policy, legal contracts, business development, environmental planning, project management, data analysis, blended public-private financing and other relevant services. In this context, the National Center will recruit a cross-disciplinary student body with the motivation and capacity to contribute to a multi-sector project development framework across the spectrum of requisite services for investment-grade energy efficiency and renewable energy project development.

3.7. Work-Learning-Service Deliverables: In addition to the development of investment-grade project proposals, National Center Work-Learning-Service core deliverables will include a broad array of modeling services for public policy decision support. The following is a sampling of deliverables:

- 1. Building a Knowledge Platform:** The National Center will develop a Sustainable Energy Knowledge Platform (Knowledge Platform) on the foundation of the U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) interoperable Analysis Tools Ecosystem—Open Studio, Energy Asset Score, Seed Platform and Building Performance Database, etc. (EERE, 2018). The Institute will expand the interoperability of EERE Analysis Tools Ecosystem to include the integration of services such as Sankey Modeling, Systems Dynamic Modeling and the Solar Wind Energy Resource Assessment (SWERA) Geospatial Toolkit in order to develop high-resolution data under a common framework for predictive analysis and decision support across multiple stakeholders.
- 2. Sankey Energy Modeling:** Sankey diagrams visualize conserved quantities of energy within defined subsystem boundaries and the distribution of conversions of energy flows across subsystem boundaries. Sankey Energy diagrams are used in various formats by international and national planning agencies, such as the International Energy Agency (IEA) and Energy Information Agency (EIA). The Institute will utilize the internationally recognized Sankey Energy diagram format developed by the Lawrence Livermore National Laboratory (LLNL). (LLNL, 2018) Work-Learning-Service interns of the Institute will develop and maintain an On-Line Sankey Energy Analysis Service for decision support at all levels from national-level to community-scale planning, and building-based energy assessments.
- 3. Systems Dynamic Modeling:** Systems Dynamic (SD) Modeling is a computer-aided approach to policy analysis and design as applied to dynamic problems arising in complex social, managerial, economic or ecological systems. Specifically, SD Modeling applies to the macro-analysis of dynamic systems characterized by interdependence, mutual interaction, information feedback and circular causality. It is commonly utilized in economics, public policy, environmental studies, defense, commerce, social science and other areas to examine macro-scale dynamics both endogenous and exogenous to linkages within and across complex systems. The National Center will utilize Millennium Institute (MI) Threshold 21 (T21) software for public policy research and energy transition planning. T21 SD modeling software provides a transparent, collaborative and interconnected policy-planning tool with critical features that supports an inclusive, comprehensive and integrated development planning process (MI, 2018). The primary Work-Service-Learning applications of SD Modeling at the proposed National Center are: (a) predictive modeling and decision support for macro-scale energy policy, planning and investment; and (b) definitive measuring of the metrics that verify progress toward sustainability within the spheres of SD Model construction—economy, society and environment—overlaid across the energy sphere.
- 4. Data Benchmarking Services:** The National Center will build benchmarking services utilizing the IAC Database and other publically available benchmarking tools to establish a Rapid Assessment Service and Risk Analysis Toolkit. The IAC Database is a collection of 18,293 assessments and 138,635 associated recommendations on the type of facility assessed (size, industry, energy usage, etc.) and details of resulting recommendations (type, energy & dollars savings etc.). The Database is searchable by assessments (industry type, size, year, energy costs, products), recommendations (type, savings, cost, implemented) and industry type. Recommendation indices are available for all assessment

recommendation codes (ARCs). Recommendation implementation rates (RIRs) can be charted by center, years, or state. Nationwide locations of assessments and recommendations can be mapped using the IACs Activity Map. The Institute will leverage the IAC Database to establish new database services detailing project performance to assess High Impact Opportunities (HIOs) and High Impact Investments (HIIs) across a full range of energy efficiency and renewable energy projects.

SECTION 4: ADAPTIVE REUSE PLAN

4.1. Summary of Occupancy & Reuse: Table 3, Building-by-Building Occupancy and Reuse, below (and in Exhibit 1, Building Occupancy and Reuse, Conceptual Layout), provide an occupancy and reuse model utilizing the Fort-Scott-Capacity-Study-TEF-2011 (Presidio Trust, 2011). The capacity of the campus utilizing the selected floor plans from the Fort-Scott-Capacity-Study totals 4,555 occupants, including buildings 1201 and 1202 currently occupied by the World Economic Forum and the Presidio Graduate School. As detailed in Section 4.2, Occupancy Profile, Table 4, Average Daily Occupancy, projected daily occupancy levels for National Center programs are not expected to exceed 40% of total campus capacity. **Note:** All occupancy numbers are subject to change upon verification of actual site conditions and the approval by the Presidio Trust, federal and/or state regulatory bodies, as may be required.

Table 3: Building-by-Building Occupancy and Reuse

Bldg. #	Admin	Clstrm	Wrkstsa	Conf	Multi-Pr	Dining	ResFac	ResDorm	Lounge	Visitor	Bldg S.F.
1201	(Not posted. Est. capacity: 30)			-	-	-	-	-	-	-	9,751
1202	(Not posted. Est. capacity: 40)			-	-	-	-	-	-	-	19,569
1203	-	-	-	6	-	-	45	-	28	-	19,864
1204	52	-	-	42	-	304	-	-	-	-	19,506
1205	-	-	-	6	-	-	-	45	28	-	19,451
1206	-	-	-	6	-	-	-	90	28	-	19,529
1207	21	-	394	58	-	-	-	-	-	-	19,419
1208	6	238	73	24	-	304	-	-	36	-	19,520
1213	44	-	-	32	-	-	-	-	-	-	9,954
1214	34	-	72	32	-	-	-	-	4	-	8,329
1216	8	260	-	18	-	96	-	-	-	-	19,776
1217	-	-	-	-	-	-	-	45	28	-	19,770
1218	-	-	-	-	-	-	-	45	28	-	24,095
1219	3	228	90	-	-	-	-	-	60	-	16,987
1220	4	-	-	-	-	-	-	-	-	6	3,618
1221	3	-	-	-	-	-	-	-	-	10	1,140
1224	20	-	-	6	-	-	-	-	8	-	6,280
1225	-	-	-	-	Storage	-	-	-	-	-	1,327
1226	3	-	-	-	387	-	-	-	-	-	13,881
1227	11	-	-	16	-	-	-	-	-	8	7,770
1331	4	-	-	-	208	-	-	-	-	-	7,186
1369	2	-	243	-	-	-	-	-	-	-	7,889
New Constr.	-	-	-	-	500	-	-	-	-	-	20,000
Transit	-	-	-	-	-	-	-	-	-	75	1,500
Total	215	726	872	246	1,095	704	45	225	256	101	316,111

Table Key: Admin: offices; Clstrm: classrooms; Wrkstsa: professional workstations; Conf: conference rooms; Multi-Pr: multi-purpose event space; Dining: kitchen and dining services; ResFac: Low-residency faculty and guest housing; ResDorm: student housing; Lounge: common areas; Visitor: dedicated public realm. **Disclaimer:** Occupancy and reuse capacity is subject to approval by the Presidio Trust and other permitting agencies, as required.

4.2. Occupancy Profile: Table 4, Average Daily Occupancy, provides a time-of-day occupancy pattern for the proposed National Center at Fort Scott utilizing selected floor plans from the Fort-Scott-Capacity-Study-TEF-2011. The occupancy profile in Table 4 indicates a peak daytime occupancy of 1,812 (or 40% of total campus capacity) during the hours of 2:00 p.m. to 5:00 p.m., projected as follows: administration, faculty and staff (236); resident and commuter students (555); workstation sublease (317); and classroom sublease (693). Overnight occupancy (9:00 p.m. – 7:00 a.m.) of 279 is projected as follows:

visiting adjunct faculty and guests (45), students (225), and staff (9), exclusive of required campus security and subcontract janitorial services. The occupancy profile excludes Bldg. 1214, the proposed new event center, designated residential facilities (Bldgs. 1203, 1205, 1206, 1217 & 1218), and other ancillary program support facilities (Bldgs. 1220, 1221, 1226 and 1331) that do not add to occupancy levels. (See Section 5, Building-by-Building Reuse Profile for narrative of occupancy and reuse.) **Note:** The Institute initially plans not-to-exceed a density of 815 administrators, faculty, staff and students on-site.

Table 4, Average Daily Occupancy Profile

	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm
Offices: Admin, Faculty & Staff													
1201 (WEF)	40	40	40	40	40	40	40	40	40	-	-	-	-
1202 (WEF, PGS)	30	30	30	30	30	30	30	30	30	-	-	-	-
1204	52	52	52	52	52	52	52	52	52	-	-	-	-
1207	21	21	21	21	21	21	21	21	21	-	-	-	-
1208	3	3	3	3	3	6	6	6	6	3	3	3	3
1213	40	40	40	40	40	40	40	40	40	4	4	4	4
1216	4	4	4	8	8	8	8	8	8	4	4	-	-
1219	3	3	3	3	3	3	3	3	3	3	3	3	3
1220	4	4	4	4	4	4	4	4	4	1	1	1	1
1221	3	3	3	3	3	3	3	3	3	3	3	3	3
1224	20	20	20	20	20	20	20	20	20	5	5	5	5
1226	3	3	3	3	3	3	3	3	3	3	3	3	3
1227	11	11	11	11	11	11	11	11	11	-	-	-	-
1331	4	4	4	4	4	4	4	4	4	2	2	2	2
1369	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Subtotal	240	240	240	244	244	247	247	247	247	30	30	26	26
Workstation Sublease													
1208	73	73	73	73	73	73	73	73	73	73	73	73	
1219	-	-	-	90	90	90	90	90	90	90	90	90	-
1369	<u>154</u>	<u>154</u>	<u>154</u>	<u>154</u>	<u>154</u>	<u>154</u>	<u>154</u>	<u>154</u>	<u>154</u>	-	-	-	-
Subtotal	227	227	227	317	317	317	317	317	317	163	163	163	-
Classroom Sublease													
1208	238	238	238	238	238	238	238	238	238	238	238	238	238
1216	-	180	180	180	180	-	227	227	227	227	227	-	-
1219	-	-	-	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>	<u>228</u>
Subtotal	238	418	418	646	646	466	693	693	693	693	693	466	466
Campus Occupancy Profile													
Admin/ Staff	240	240	240	244	244	247	247	247	247	30	30	26	26
Student Enrollment	555	555	555	555	555	555	555	555	555	270	270	270	270
Wrksta Sublease	227	227	227	317	317	317	317	317	317	163	163	163	-
Clsrm Sublease	238	418	418	646	646	466	693	693	693	693	693	466	466
Total Occupancy	1,260	1,440	1,440	1,762	1,762	1,585	1,812	1,812	1,812	1,156	1,156	925	762

Disclaimer: Total occupancy as posted above is an estimated not-to-exceed occupancy based upon selected information as contained in the Fort-Scott-Capacity-Study-TEF-2011. All occupancy numbers are estimated and subject to change upon verification of actual site conditions, and the approval by the Presidio Trust and other federal and state regulatory bodies, as may be required.

4.3. Use Profile and Impact: Assuming a designated maximum occupancy for 1,812 persons on-site based upon the projected use schedule as shown in Table 4, above, the Fort Scott facilities will provide services on an annual basis, as follows:

- 1. National Center Student Enrollment:** Undergraduate, graduate and post-graduate student enrollment in National Center programs is projected at 3,525 students per semester calculated as follows: 135 students in residency per semester, 330 commuter students, and 2,970 low-residency students in 33 cohorts of not-to-exceed 90 students.

Undergraduate, graduate and post-graduate student population on campus will not exceed 555 students at any given time. (See 5.1, Residential Program Facilities.)

2. **Offices:** Office facilities for administration, faculty and staff (capacity 215) will accommodate 236 staff and 45 adjunct faculty residing on-site, part-time. Assumes a limited number of shared offices for staff and multiple offices shared by adjunct faculty. (See 5.5. Office Facilities.)
3. **Optional Workstation Sublease:** Approximately 317 of a projected 872 dedicated computer workstations on-site will be available for sublease (and/or on a subsidy basis) to mission-aligned organizations. Assuming an average availability of 236 computer workstations per day for 220 days per year at up to 13 hours per day, in excess of 675,000 workstation hours would be available for use by mission-aligned organizations. (See 5.4. Professional Workstation Facilities.)
4. **Optional Classroom Sublease:** Approximately 228 of 726 classroom seats (with computer workstations) will be available for sublease (and/or on a subsidy basis) for mission-aligned organizations or volunteers. Assuming availability of 228 classroom seats per day for 220 days per year at up to 12 hours per day, 601,920 classroom hours would be available for mission-aligned organizations or volunteers to support disaster recovery services nationwide. (See 5.3. Instructional Facilities.)
5. **Optional K-12 Education (Bldg. 1216):** Assumes up to 260 high school students per day (up to 1,300 students annually) enrolled in Work-Learning-Service for 5 hours per week (28-weeks) totals 182,000 hours annually. K-12 Student Field Trips: Assuming, 5-days per week (28-weeks) for up to 180 students, Bldg. 1216 would serve approximately 25,200 students annually. (See 5.8. K-12 Education.)

SECTION 5: BUILDING-BY-BUILDING REUSE PROFILE

5.1. Residential Program Facilities: The Institute is proposing campus housing for adjunct faculty, guests, students and other program participants in residency and low-residency programs at peak enrollment (on-site capacity: 270), as follows:

1. **Residency Programs:** Primary residential program facilities are proposed as follows: Bldg. 1203 (single occupancy, capacity: 45 visiting, part-time adjunct faculty and guests); and Bldgs. 1205, 1217 and 1218 (single occupancy, capacity: 135 students).
2. **Low-Residency Programs:** Bldg. 1206 is proposed for 5-day and 8-day low-residency programs accommodating ~33 cohorts annually consisting of ~45 to 90 students per low-residency term (single and/or double occupancy). Low-residency terms are targeted for multi-sector stakeholder groups, including consortium members, government, industry and educators, undergraduate and graduate interns, and post-graduate fellows. Bldg. 1206 is projected to serve ~2,970 participants in low-residency programs annually.

5.2. Residential Support Facilities: Bldg. 1331 is proposed for combined use as a student union and special events center (capacity: 208), and offices (capacity: 4). Bldg. 1226 Level 1 will be utilized as a fitness center and juice bar; Level 2 is proposed for use as a multi-purpose recreation center (gymnasium) and assembly hall (capacity: 387). Bldg. 1219 Basement Level is proposed for use as a self-serve laundry with a subcontract scheduled dry-cleaning drop-off and pick-up service, and a student lounge area (capacity: 60). Bldg. 1221 is proposed for use as a student coffee house (capacity: 30), as feasible. Bldg. 1220 is proposed for use as a medical and counseling center (capacity: 4 staff; 6 patients).

5.3. Instructional Facilities: Bldg. 1219 is proposed for use as the primary campus instructional facility, and for sublease (or on a subsidy basis) for mission-aligned organizations and/or volunteers, as available. Levels 1 and 2 will include designated classrooms (capacity: 228); Level 1 will also include a professional workstation-training center (capacity: 144).

5.4. Professional Workstation Facilities: Bldg. 1207 is proposed for use as a dedicated “**Project Incubator**” for the development of investment-grade proposals for energy efficiency and renewable energy projects. Configured with administrative and faculty offices (capacity: 21), conference rooms (capacity: 58) and professional workstations (capacity: 394), Bldg. 1207 will be organized based upon a process flow structure in the context of critical path scheduling requirements in the energy efficiency and renewable energy project lifecycle from concept development to commissioning. Bldg. 1214 is proposed for use as a macro-scale special projects coordination center with administrative offices (capacity: 34), conference rooms (capacity: 32), professional workstations (capacity: 72) and lounge (capacity: 4). Bldg. 1369 is proposed for use as a dedicated professional workstation facility (capacity: 243) for the development of core Work-Learning-Service deliverables—Sustainable Energy Knowledge Platform, Sankey Energy Modeling, Systems Dynamic Modeling and Data Benchmarking Services—as referenced in Section 3.7, Work-Learning-Service Deliverables.

5.5. Office Facilities: The Institute will extend an invitation to the World Economic Forum and the Presidio Graduate School to remain on-site in Bldgs. 1201 and 1202 (est. capacity: 70) and participate in the National Center’s programming. Bldg. 1204 Levels 2 and 3 will be utilized for administration staff and senior faculty offices (capacity: 52) with conference facilities (capacity: 42). Bldg. 1213 is proposed for use as administrative offices (capacity: 44) with conference rooms (capacity: 32). Bldg. 1224 is proposed for use by faculty and staff (capacity: 20) with conference room (capacity 6) and lounge (capacity: 8). Bldg. 1227 is proposed for use by administration (capacity: 11) with conference room (capacity: 16) and lounge (capacity: 8).

5.6. Primary Dining Facilities: Bldg. 1204 Level 1 is proposed for use as resident foodservices configured into two separate kitchens and dining areas for adjunct faculty, graduate and post-graduate students and guests (capacity: 304). Bldg. 1208 Level 1 will be divided into two distinct food service areas (capacity: 304), as follows: (a) the north end will contain a delicatessen-style menu, including full-service buffet, and self-serve (pre-prepared and packaged) menu available in sit-down or takeout options; and (b) the south end will feature a sit-down casual dining with restaurant-style table service. Both areas will provide foodservices for the campus and the visiting public.

5.7. Integrated Programming: Bldg. 1208 Level 2 and Level 3 is proposed for the integration of the National Center and General Public programming, as follows:

1. **Level 2:** Configured into two lecture halls (capacity: 180 and 41), one classroom or seminar room (capacity: 17), and three multi-purpose professional workstations rooms (capacity: 22) will be utilized for joint National Center programming and scheduled public training. An additional three conference rooms (capacity: 18) will be available for joint National Center and public use. Level 2 will include an office for three dedicated reception desks staffed by the Institute to coordinate room scheduling and access.
2. **Level 3:** Configured into a lecture hall (capacity: 51) and a seminar room (capacity: 6), Level 3 will be utilized for joint National Center programming and for scheduled public events. A lounge area (capacity: 36) and four small sitting rooms (capacity: 16) will encourage social engagement between faculty, students, staff and the general public.

Note: Bldg. 1208 and the proposed Event Center (see Section 5.9, New Construction, Event Center) will be jointly scheduled for mission-aligned conference events.

5.8. K-12 Education: Bldg. 1216 Level 1 and Level 2 will be wholly dedicated to K-12 education, and Level 3 for use as an interpretive museum, as follows:

1. **Level 1:** The north end will serve as a multi-purpose room and reception area (capacity: 96) for the K-12 visiting population. The multi-purpose room will include foodservices (lunch only) supported by a kitchen and food storage area. The south end of the building will contain staff offices (capacity: 11) and a lounge area (capacity: 10).
2. **Level 2:** The north end will be configured as a multi-media lecture hall (capacity: 180), and the south end configured into two classrooms (capacity: 80). The second floor will additionally contain three conference rooms (capacity: 18), and one conference room (capacity: 9) for professional development for K-12 teachers.

3. **Level 3:** Level 3 is proposed as an interpretive museum with an open floor plan centered on the historic murals, which depict various aspects of civilian and military life during the period between the Korean and Vietnam Wars. The open floor area will feature interactive touch screen video tables with content on the theme of “Honoring the Past” of Fort Scott and the role of The Presidio in defense of the Nation.
4. **K-12 Education Programming:** The K-12 educational program emphasis of Bldg. 2016 will be on the concept of Coupled Natural and Human Systems (CNHS), specifically Earth systems simulation modeling of the impact of energy services on the natural environment as articulated within the framework of Next Generation Science Standards. The principal objective of the K-12 educational program in Bldg. 2016 is to improve attitudinal change in students toward STEM education and careers in energy services and geosciences, and to support the development of related instructional technologies in public schools nationwide through professional development for teachers. K-12 educational programming will be scheduled from 9:00 a.m. to 1:00 p.m. (Monday through Friday) for 28 weeks during the school year for school field trips, and 11:00 a.m. to 3:00 p.m. (Sunday) for the general public. Bldg. 1216 would serve approximately 25,200 K-12 students annually.
5. **High-School Work-Learning-Service:** The National Center proposes to operate a Work-Learning-Service program for high school students during the academic school year operating from the hours of 1:00 p.m. to 6:00 p.m. (Monday through Friday) for 28 weeks during the school year, and 10:00 a.m. to 3:00 p.m. (Saturdays). Work-Learning-Service activities for high school students will range from training and certification for disaster preparedness to participating in the development of core Work-Learning-Service deliverables of the National Center, specifically, peer-to-peer training in household energy monitoring. Governments and electric utilities in the U.S. are responding to escalating concerns over climate change, energy security and volatile energy costs by making bold new investments in smart grids and smart metering programs. The decisive challenge to the success of these programs is engaging the “household energy managers” in effective smart metering practices across the national housing inventory consisting of 116 million metered residencies. The Work-Learning-Service activities at Bldg. 2016 will engage high school students to serve in the critical role of conducting nationwide, peer-to-peer and consumer e-learning services in household energy management based on the successful STEM-based instructional technology research conducted by the University of North Texas from 2008-2018, and funded by the National Science Foundation (Grant #DRL-083376 and Grant #1312168). Assuming up to 260 high school students working 5 hours per week for 28 weeks, the high-school Work-Learning-Service program will provide up to 182,000 community service hours annually. Up to 520 students would be selected to enroll in a Summer Work-Learning-Service program for up to 20 hours per week for an 8-week term, providing an additional 166,400 community service hours annually. A select number of highly qualified graduating high school seniors participating in the Work-Learning-Service program would be invited to enroll in the National Center Foundation Year on scholarship.

5.9. New Construction, Event Center: The Institute is proposing to construct a new building totaling 20,000 S.F. in the architectural style of Building 2016 (sheltered entry) with the interior configured as a one-story open structure (1st floor to roof rafters) with mezzanine and functional basement for campus-wide lectures, conferences and special events (capacity: 500). The facility will be designed to serve multiple functions, and will be equipped with a stage and large theater screen. As feasible, the facility will include an immersive, augmented reality geospatial theater featuring Earth systems simulations and animations utilizing real-time data from the National Aeronautics and Space Administration (NASA) satellite fleet, archived data from the National Oceanic and Atmospheric Administration (NOAA) Big Data Project, and real-time and archived data from commercial satellite services. The immersive, augmented reality theater will be utilized for research and education focused on the modeling of Coupled Natural and Human Systems (CNHS) in response to public energy policy. The geospatial theater will be integrated with the proposed programs of the National Center across all stakeholder groups, including engagement of K-12 school students in the geosciences. Proposed construction of a new event center will not increase site occupancy levels, as it is intended to augment existing National Center educational programming.

SECTION 6: ENHANCING THE PUBLIC REALM

6.1. Campus Design Challenges and Opportunities: Repurposing Fort Winfield Scott as a “Campus for Change” in a manner that at one and the same time respects and retains the district’s contemplative setting while enhancing the public realm represents unique design challenges and opportunities. The Institute recognizes that RFCP Required Elements #3, #4, #6, #7 and Optional Elements C and D, as well as the programmatic density of the proposed National Center’s educational activities, suggest a patterned use profile that may potentially conflict with creating and maintaining a contemplative campus setting. Therefore, the Institute is cautious to assume that the use pattern of Fort Scott facilities as identified in Section 4, Adaptive Reuse Plan, and Section 5, Building-by-Building Reuse Profile, is a final statement of proposed use and/or campus density.

6.2. Commissioned Design Review. In consideration of 6.1, Campus Design Challenges and Opportunities, as stated above, should the Presidio Trust deem the Institute a qualified respondent to participate in Step 2 - Request for Proposals, the Institute shall commission an intensive design review based upon the assumptions contained in Section 4, Adaptive Reuse Plan, and Section 5, Building-by-Building Reuse Profile. The design review, to be conducted in consultation with the Presidio Trust (as feasible), shall seek to clarify the following: (a) identification of and financial responsibility for all design elements contained within the *Fort Scott Site & Landscape Improvement Strategy (2013)*; (b) definition of acceptable use patterns and density that may resolve perceived conflicts between creating and maintaining a contemplative campus setting and enhancing the public realm; and (c) identification of the natural and physical assets of the Fort Scott site, including topography, seasonal meteorological conditions, etc., that may mitigate or exacerbate the desired outcome of creating and maintaining a contemplative campus setting while enhancing the public realm. (See additional comments in 6.3. Landscaping, Parking and Transportation Management, item 4f.)

6.3. Landscaping, Parking and Transportation Management: The Institute will comply with site design elements required in the *National Environmental Policy Act (NEPA)* and the *National Historic Preservation Act (NHPA)*, and contained in the *Presidio Trust Management Plan (2002)*, the *Presidio Vegetation Management Plan (2001)*, the *Fort Scott Cultural Landscape Assessment (2008)*, and the *Fort Scott Site & Landscape Improvement Strategy (2013)*. Each site improvement will be subject to additional *NHPA/NEPA (N2)* and Design Review Committee (DRC) review. Key elements to the Institute’s proposed plan are as follows:

1. **Landscaping:** The Institute will follow the design guidelines as contained in the *Fort Scott Site & Landscape Improvement Strategy (2013)*, subject to a final design review as stated in 6.2. Commissioned Design Review, above.
2. **Parking:** The Institute will follow the design guidelines for parking improvements as specified in the *Fort Scott Site & Landscape Improvement Strategy (2013)*, with parking allocated as follows: (i) Lot A (capacity: 140), Lot B (capacity: 94), On-Street (capacity: 96), Service Vehicles (capacity: 7), Short Term (capacity: 12) and Vanpool (capacity: 6) will be reserved for Institute administrators, staff, senior faculty, vendors, service vehicles and vans on a permit basis. Students and adjunct faculty residing on campus will not be permitted to keep a vehicle on site, but will have access to a dedicated car-sharing vehicle fleet consisting of electric vehicles (EVs) and plug-in hybrid electric vehicles (PHEVs), and access to shuttle van services provided by the Institute. Lots A and B are to be designated as vehicle-to-grid (V2G) for both EVs and PHEVs to support renewable energy infrastructure. (ii) Lot C (capacity: 223) and ADA (capacity: 37) will be designated for general public access and will contain EV and PHEV services infrastructure.
3. **Proposed Changes to Parking:** The Institute proposes to install 3 oversized parking spaces for charter bus services (including school buses) located in Lot C. Charter buses are proposed to utilize the service access road (Ralston Ave.) for drop-off and pick-up at Bldg. 2016 and the planned new Event Center, and continue around the service road to park on the back side of Lot C. The Institute also proposes to increase the vanpool services from a capacity of 6 to a capacity of 12. Proposed changes may impact the 610 parking space count identified in the *Fort Scott Site & Landscape Improvement Strategy*, but may still remain within the area project demand profile as analyzed in the Presidio Trust Management Plan. The Institute will further analyze area project parking demand within the Intensive Transportation Demand Management Plan if selected to proceed to RFCP Step 2, Request for Proposals.

- 4. Transportation Management:** The Institute will finalize an Intensive Transportation Demand Management Plan in compliance with the Presidio Trust Required Element #8 if selected to proceed to RFCP Step 2, Request for Proposals. Preliminary elements of the Institute’s transportation planning are as follows:
- a. Administrators, Faculty and Staff:** On-site parking will be available on a permit basis for 285 administration, faculty and staff in Lot A (capacity: 140), Lot B (capacity: 94) and On-Street parking (capacity: 96), allowing for designated public parking in Lot C (capacity: 223) and ADA (capacity: 37). The Institute will provide incentives for administrators, faculty and staff to utilize transportation alternatives, including ride-share and public transportation.
 - b. Transit Center Access:** The Institute will construct a one-story transit center totaling a maximum of 1,500 S.F. per RFCP Required Element #4. The transit center will serve as the transportation hub for non-resident adjunct faculty, administrators, staff, commuter students and the general public.
 - c. Commuter Students:** Public transportation and off-site parking will serve the proposed commuter population of 330 students. The public transportation option will require the expansion of MUNI route 29 to serve the new Fort Scott transit center (Required Element #4). The off-site parking option will utilize The San Francisco Bay Area Rapid Transit District (BART). Monthly Reserved Permit Parking is available at most BART stations that offer parking. Permits are station-specific and cost between \$30 and \$115.50 per month (subject to change). The Institute will offer vanpool shuttle service to and from the BART Market Street Embarcadero Station, and subsidize monthly parking fees for commuter students regardless of origin on the BART system.
 - d. Adjunct Faculty:** The Institute will offer vanpool shuttle service to and from the BART Market Street, Embarcadero Station, and the San Francisco International Airport for the adjunct faculty residing on campus in Bldg. #1203.
 - e. Optional K-12 and High School Work-Learning-Service:** The K-12 education sector utilizing Bldg. 1216 will arrive on-site by charter or school bus services. High school Work-Learning-Service students will utilize new transit center drop-off or public transportation services, including vanpool shuttle service to and from the BART Market Street Embarcadero Station.
 - f. Optional Mission-Aligned Organizations and Volunteers:** Personnel from mission-aligned organizations and volunteers will utilize new transit center drop-off or public transportation services, including vanpool shuttle service to and from the BART Market Street Embarcadero Station.

Note: The proposed Institute vanpool shuttle service to and from the BART Market Street Embarcadero Station estimated at 1,056 pick-ups and drop-offs daily is not feasible assuming peak National Center capacity across all programs. If the Institute is selected to proceed to RFCP Step 2, Request for Proposals, the Intensive Transportation Demand Management Plan (RFCP Required Element #8) will include negotiations with the San Francisco Municipal Transit Agency (SFMTA) for an express bus option from a designated BART station(s) to the new Fort Scott transit center. Occupancy scheduling and/or program enrollment numbers for all National Center commuter programs may require necessary downward adjustments. The Institute, therefore, initially plans not-to-exceed a density of 815 administrators, faculty, staff and students on-site with a parking impact of not-to-exceed 355 vehicles, just over one half of the 610 parking space count as identified in the *Fort Scott Site & Landscape Improvement Strategy*. This reduces designated maximum occupancy at Fort Scott from 1,812 persons to 950 persons, 21% of total proposed project design capacity, including the visiting public. Optional use of Fort Scott facilities by High School Work-Learning-Service, and mission-aligned organizations and volunteers, will be determined once the Institute has had sufficient operational experience and planning approval from the Presidio Trust to permit additional occupancy density.

SECTION 7: FINANCIAL

7.1. Estimated Capital Expenditures (CapEx), Construction: Total project capital expenditures of \$340,774,851 is budgeted as follows:

Table 5: Estimated Project Costs

Cost Estimate	Description of Costs
\$214,753,700	Rehabilitation of 285,291 Sq. Ft. of historic buildings as specified in Required Elements #2, #4 and #5, and 21,500 S.F. for Optional Elements A and B (see Table 5, Estimated Construction Costs, below).
35,700,043	Site infrastructure (pending final engineering review).
42,840,051	Architectural, engineering and developer fees.
47,481,057	CapEx reserve for Required Items #1, #3, #6 and #8 and Optional Elements C and D.
\$340,774,851	Total Cost

Disclaimer: Site infrastructure, architectural, engineering, developer and CapEx reserve costs are estimated budgets. See Table 6, below for estimated construction costs.

Table 6: Estimated Construction Costs

Cost Estimate \$ Sq. Ft:	% of Cost	\$ Per S.F.	Total Cost
Building Infrastructure			
Demolition	2.50%	17.50	5,368,843
Building Stabilization (Seismic)	3.00%	21.00	6,442,611
Environment Remediation	2.00%	14.00	4,295,074
Building Envelop			
Roofing	2.30%	16.10	4,939,335
Exterior	0.86%	6.02	1,846,882
Glazing	0.70%	4.90	1,503,276
Insulation & Sealing	0.64%	4.48	1,374,424
Mechanical Systems			
HVAC	22.00%	154.00	47,245,814
Electrical / Mechanical	13.00%	91.00	27,917,981
IT Services / Server Farm	6.00%	42.00	12,885,222
Water & Sewer (Fire Main)	5.00%	35.00	10,737,685
Interior Improvements			
Drywall	8.00%	56.00	17,180,296
Ceilings	7.00%	49.00	15,032,759
Flooring	6.00%	42.00	12,885,222
Millwork	6.00%	42.00	12,885,222
Fire Protection	3.00%	21.00	6,442,611
Voice & Data	3.00%	21.00	6,442,611
Glass & Glazing	1.00%	7.00	2,147,537
General Conditions	3.00%	21.00	6,442,611
Paints	2.00%	14.00	4,295,074
General Cleanup	1.00%	7.00	2,147,537
Other	2.00%	14.00	4,295,074
Totals:	100.00%	\$700.00	214,753,700

Disclaimer: Construction costs are estimated using RS Means (Institutional) for San Francisco; site infrastructure and construction contingency and budgeted allocations.

7.2. Estimated Fixtures and Furnishings (CapEx): CapEx expenditure on fixtures and furnishings, including delivery and installation, totals \$23,246,585 as detailed in Table 7, Fixtures and Furnishings, below:

Table 7: Fixtures and Furnishings

Cost Estimate:		Total S.F.	Total Cost
		316,111	23,246,585
Estimated Cost Breakdown			
F&F by Category	Capacity	Unit Cost	
Office	306	5,169	1,581,670
Workstation	932	1,101	1,026,272
Classrooms	482	1,101	530,754
Housing - Single Occupancy	334	6,077	2,029,718
Housing - Double Occupancy	231	3,039	701,894
Other	Budget	-	587,036
Information Tech. (IT)	#Units	Budget	
Admin/WrkSta CPU-Software	1,720	4,529	7,789,880
Display Systems - Conference	50	9,560	481,187
Display Systems - Classroom	34	9,560	325,040
Student IT	565	4,529	2,558,885
Infrastructure	Budget	-	1,250,000
Other	Budget	-	1,476,916
Common & Conference	S.F.	Budget	
Common Space Requirements	352	350	123,200
Conference / Classrooms	50	2,500	125,833
Food Service - Seating	704	-	316,800
Food Service Kitchen	Budget	-	1,794,000
Event Space	1,095	500	547,500
Totals:		316,111	23,246,585

Disclaimer: Fixtures and Furnishings are calculated based upon vendor quotations. All costs are subject to change.

7.3. Project Budget Summary

Table 8: Project Budget Summary, Development and Construction Phase

Cost Category	Cost Estimate
CapEx Construction	\$340,774,851
CapEx Fixtures and Furnishings	23,246,585
Operating Reserve	31,654,038
Total Project Budget Allocation	\$395,675,474

Disclaimer: All costs are estimates only and subject to change.

7.4. Blended Revenue Model: Financial sustainability for National Center operations will be achieved based upon a blended revenue model consisting of student tuition and fees, workstation lease fees, revenue from energy services contracts (ESCO) and traditional academic and non-profit revenue mechanisms, e.g. research grants, capital campaigns, membership, etc. Table 9, Summary of Revenue and Expense (Breakeven Model), below, represents a breakeven model identifying three primary revenue streams and estimated projected expenses. Revenue postings in the model are arbitrary amounts for purposes of model construction. Expenses shown in this breakeven model are estimated projections based upon historical cost associated with actual operating expenses of educational institutions. For a discussion of revenue, see Section 7.5, below. See Section 7.6,

Expenses, for a discussion of operating expenses. The Institute will produce a detailed financial pro forma in collaboration with proposed Consortium members based on the final outcomes of a commissioned design review if selected by the Presidio Trust to proceed to Step 2, Request for Proposals.

Table 9: Summary of Revenue and Expense (Breakeven Model)

Revenue & Expense (Breakeven)	
REVENUE	
Tuition & Fees	41,216,000
Workstation Services	18,640,000
Payback+5x5 ESCO	24,684,953
Other	<u>15,000,000</u>
Total Revenue	99,540,953
EXPENSES	
Facility Improvements	26,896,111
Fixtures & Furnishings, IT Setup & OpEx Reserve	4,748,102
Depreciation	11,900,014
Administrative Personnel	9,405,104
Faculty & Workstation Supervisors	25,519,040
Scholarships	11,520,000
Fellowships	5,760,000
Facility Lease	1,646,360
Facilities Operating	<u>2,146,222</u>
Total Expenses	99,540,953
REVENUE LESS EXPENSES	
Revenue Less Expenses	(0)

Disclaimer: Table 9 represents a simplified breakeven model identifying three primary revenue streams and estimated project expenses. Revenue postings in the model are arbitrary amounts for purposes of model construction. For a discussion of revenue, see section 9.5, below. Expenses shown in this breakeven model are estimated projections based upon historical cost associated with actual operating expenses of educational institutions. See section 9.6, below, for a discussion of operating expenses.

7.5. Revenue Models:

1. Tuition & Fees: The National Center seeks to achieve tuition free status and offer full-time paid graduate internships and post-graduate fellowships within 3 to 5 years of start-up of operations based upon Workstation Lease Agreements and Payback+5x5 ESCO revenue as summarized in Items 2 and three, below. Prior to achieving tuition-free status, the National Center will charge tuition and fees that will vary across a wide range of program delivery models. The tuition revenue Table 9: Summary of Revenue and Expense (Breakeven Model), assumes tuition and fees equal to top-tier research universities throughout the U.S.

2. Workstation Lease Agreements: Workstation lease agreements are effectively a time-share of workstation services and/or a subscription agreement for the key delivery services of the National Center. Delivery services include, but are not limited to, adjunct faculty and/or fellow consulting services, subscription access to on-line toolkits and project development services from concept to commissioning (see Section 3.7. Work-Learning-Service Deliverables. The National Center assumes a total of 932 dedicated and shared workstations on-site staffed by undergraduate Work-Learning-Service interns, graduate fellows and industry partners at an annual average revenue of \$20,000 per workstation would generate \$18,640,000 in workstation lease revenue.

3. Payback+5x5 ESCO: Payback+5x5 Energy Services Contract (ESCO) refers to an “Avoided Cost Share Agreement” on energy efficiency projects or a “Revenue Share Agreement” on renewable energy projects developed by the Work-Learning-Service program of the National Center. Payback+5x5 revenue share is on the basis of 5% of avoided cost savings (or gross earning of a renewable energy project) during the payback period plus 5% per annum for a minimum period of 5 years after payback. The Institute is targeting mission-aligned investments totaling ~\$4.5 billion within 5 years to achieve financial sustainability for the National Center solely on the basis of the Payback+5x5 ESCO revenue, assuming an average annual payback period of 2.33 years. The Payback+5x5 revenue model relies upon adjunct faculty in the field identifying qualified clients. Developing and maintaining ~\$2.5 billion Payback+5x5 project portfolio would require approximately 180 industry affiliated adjunct faculty securing \$2.8 million annually in ESCO contract value, or \$500 million in ESCO project value annually.

a. **Feasibility of Scaling to \$2.5 Billion in Payback+5x5 ESCO Agreements:** In 2017, the Energy Analysis and Environmental Impacts Division (EAEID) of the Lawrence Berkeley National Laboratory published a study, *Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry*, based upon the national building inventory available for retrofit (EAEID, 2017). The study presented two scenarios: (i) a base case market analysis, and (ii) a case “unfettered” by market, bureaucratic, and regulatory barriers. Using known energy efficiency retrofit costs from the industry database compiled by the National Association of Energy Service Companies (NAESCO), and the known available commercial, institution and industrial space available for retrofit, the study estimated remaining market potential is \$92-\$201 billion for the base case, and \$190-\$333 billion for the unfettered case. In 2014, total U.S. ESCO industry revenue was estimated at \$5.3 billion. In 2016, the latest year for which data is available, the ESCO industry grew to \$6.3 billion. \$500 million in annual Payback+5x5 ESCO Agreements represents a 8% market increase over 2016 total revenue, but only .05% of the low estimate of the remaining market potential of \$92 billion for the base case. According to the Bloomberg New Energy Finance report, *Sustainable Energy in America*, market drivers are sustaining growth in clean energy development with \$57 billion in new investments in 2017 (Bloomberg, 2017). \$500 million in annual Payback+5x5 ESCO agreements in the clean energy sector represents a .09% of the 2017 market investment. In order for the National Center to achieve financial sustainability based upon Payback+5x5 ESCO Agreements alone, the Institute will seek “forward commitments” for energy efficiency and renewable energy project financing at total \$500 million annually, \$2.5 billion over five years, to finance qualified (bondable) private sector industry partners.

4. Other: The revenue of “Other” refers to traditional academic and non-profit revenue mechanisms, e.g. research grants, capital campaigns, membership drives, etc. The sample model reflect an estimate of nearly 15% of the projected revenue for the National Center to be sourced from private foundations, corporate giving, individual donors and research grants. At the start-up phase of the National Center, the Institute will need to rely upon traditional academic and non-profit revenue mechanisms in the absence of self-generating revenue from enrollment, workstation lease agreements and Payback+5x5 ESCO Agreements. Principally, the Institute will rely upon its university-based membership, and corporate and philanthropic giving to generate scholarships to partially or wholly offset student tuition and fees.

7.6. Expenses: Projected annual operating expenses (OpEx) of the National Center are budgeted at \$99,540,935.

1. **Facility Improvements:** Assumes annual distribution of 6.5% of project capital expenditures (CapEx) of \$340,774,851 as referenced in Table 5, Estimated Project Costs, on page 15.
2. **Fixtures & Furnishings:** Assumes an annual distribution of 6.5% of \$54,900,623 to the SPV based upon a CapEx of \$23,246,585 and OpEx \$31,654,038 to support the development of National Center IT-based curriculum delivery services.
3. **Depreciation:** Assumes annual depreciation costs (at varying rates and schedules) for depreciation on facilities, fixtures and furnishings. Depreciation may be structured as a PRI under the SPV and passed through to for-profit investors for tax purposes.

4. **Administrative Personnel:** Assumes the annual cost burden of administrative personnel supported by consortium member administrators (paid from tuition expenses), and supported by graduate and post-graduate Work-Learning-Service interns (paid from fellowships).
5. **Faculty & Workstation Supervisors:** Assumes core faculty of 50 (paid from tuition and fees) exclusive of graduate and post-graduate Work-Learning-Service interns (paid from fellowships), and assumes up to 510 FTE workstation supervisors (on-site and off-site) at an average cost share of 50% with industry partners.
6. **Scholarships:** Graduate and post-graduate student scholarships are calculated at 180 students at \$64,000 per student (FTE residency program only), inclusive of room and board.
7. **Fellowships:** Graduate and post-graduate student fellowships are calculated at 180 students at \$32,000 per student (FTE residency program only), inclusive of full benefits.
8. **Facility Lease:** Annual facility lease payment to The Presidio Trust is calculated at a total of 314,611 Sq. Ft. of occupied space at \$5.21 per Sq. Ft.
9. **Facilities Operating:** Assumes annual facilities OpEx of \$2,146,222 based upon 314,611 Sq. Ft. of occupied space at \$6.82 per Sq. Ft.

SECTION 8: ORGANIZATIONAL MATTERS

8.1. The Global Challenge Award, Inc: The Global Challenge Award, Inc. (Global Challenge) is a Vermont-based, tax-exempt, domestic non-profit 501(c)(3) corporation (State of Vermont Business Identification Number 0077088). Global Challenge was incorporated on November 18, 2005. Since 2006, Global Challenge has participated in a series of National Science Foundation (NSF) research grants funded under the ITEST (Information Technology Experiences for Students and Teachers) in collaboration with the University of Vermont (Burlington, Vermont), the University of North Texas (Denton, Texas) and the SolarQuest Education Foundation, Inc. (Chelsea, Vermont). The NSF ITEST program, operating under the NSF Directorate for Education & Human Resources Research on Learning in Formal and Informal Settings, supports the research and development of innovative models for engaging K-12 students in authentic experiences that build their capacity to participate in the science, technology, engineering, and mathematics (STEM) workforce of the future. Since 2015, Global Challenge has entered into a planning and reorganizational phase for the development of The Renewable Nations Institute as a residential-based Work-College program under leadership of its Executive Director and Chief Operating Officer (CEO), Allan E. Baer, and an Interim Board of Directors. During this planning period, Global Challenge filed a business name (d.b.a.) "The Renewable Nations Institute" (State of Vermont Business Identification Number 0331925). The Global Challenge Award, Inc. is in "Good Standing" with the State of Vermont Secretary of State with "Active" status.

8.2. IRS Tax-Exempt Status: In May 2006 the U.S. Internal Revenue Service (IRS) issued a Determination Letter indicating that The Global Challenge Award, Inc., is exempt from federal income tax under section 501(c)(3) and is registered as a public charity under sections 509(a)(1) and 170(b)(i)(A)(vi) of the Internal Revenue Code with an Advanced Ruling Period Ending December 31, 2009.

8.3. Special Purpose Vehicle (SPV): The Institute will establish a Vermont-based, Low-profit Limited Liability Company (L3C), as a special purpose vehicle (SPV) to finance, plan, design, engineer, construct, retrofit, furnish and equip Fort Scott for the non-profit consortium to lease, operate and maintain the National Center. Upon determination by The Presidio Trust that the Institute is a qualified respondent and invited to participate in Step 2 - Request for Proposals, the Institute will file L3C Articles of Organization in compliance with State of Vermont corporate law 11 V.S.A. Ch.21 generally, and 11 V.S.A.§3001(27) specifically, as a manager-managed entity. Proof of filing of the Articles of Organization with a Certificate of Good standing issued by the State of Vermont Secretary of State will be provided to The Presidio Trust. As the founding member of the L3C, the Institute will appoint the L3C management team and retain a development advisory board charged with the negotiations between the Presidio Trust and the Renewable Nations Institute pursuant to a Letter of Intent and/or an Exclusive Right-to-Negotiate a long-term lease for the occupancy of Fort Scott.

8.4. Required Disclaimer: The Special Purpose Vehicle (SPV), registered as a Vermont-based Low-profit Limited Liability Company (L3C), shall be organized in compliance with State of Vermont corporate law V.S.A. Ch.25, Subchapter 11, Low-profit Limited Liability Companies 11 V.S.A. § 4162: A limited liability company shall be organized for a business purpose that satisfies, and shall at all times be operated to satisfy, each of the following requirements:

- (1) The company:
 - (A) Significantly furthers the accomplishment of one or more charitable or educational purposes within the meaning of 26 U.S.C. § 170(c)(2)(B); and
 - (B) Would not have been formed but for the company's relationship to the accomplishment of charitable or educational purposes.
- (2) No significant purpose of the company is the production of income or the appreciation of property; provided, however, that the fact that a person produces significant income or capital appreciation shall not, in the absence of other factors, be conclusive evidence of a significant purpose involving the production of income or the appreciation of property.
- (3) No purpose of the company is to accomplish one or more political or legislative purposes within the meaning of 26 U.S.C. § 170(c)(2)(D). (Added 2015, No. 17, § 2.)

8.5. Project Capitalization: The SPV shall issue a Private Placement Memorandum (Exempt Offering) under Regulation D 506(b) of the U.S. Securities and Exchange Commission (SEC) and Section 4(a)(2) of the Securities Act of 1993 (the "Securities Act") after the enactment of the JOBS Act on April 5, 2012, which exempts from registration transactions by an issuer not involving any public offering. Rule 506(b) of Regulation D is considered a "safe harbor" under Section 4(a)(2), and provides objective standards that meet the requirements of the Section 4(a)(2) exemption. Companies conducting an offering under Rule 506(b) can raise an unlimited amount of money and can sell securities to an unlimited number of accredited investors. The SPV will retain the services of a private sector registered securities and/or non-profit investment syndicator to support a Regulation D 506(b) capital raise consisting of layered classifications of accredited investors, including program-related, mission-driven and market-rate investors. The Institute will secure additional equity funds (grants) for investment in the SPV to qualify the project as a high quality risk-adjusted investment. The Institute will operate a capital campaign over a period of 10 years to replace investor funding aggregated under the SPV.

8.6. Academic Consortium Model: The proposed National Center will consist of a consortium of university-based business and engineering schools, instructional technology and energy research institutes (and other general academic programs) from colleges and universities across the United States committed to empowering higher education administrators, faculty, staff and students to become effective change agents and drivers of sustainability innovation. The Consortium will consist of two general membership categories by function: geographic or thematic hubs, and host campuses. Geographic hubs coordinate regional membership in Consortium to support National Center outreach for host campus membership and student enrollment. Thematic hubs drive subject matter content and manage credit-bearing courses and degree-granting academic programs offered at the National Center under a master articulation agreement governing the transfer of credits between Consortium members and/or other colleges and universities. Host campuses sponsor students for admission to National Center programs and conduct outreach to potential community stakeholders that may benefit from National Center services. All consortium members will be provided with dedicated workstation hardware and software consistent with the level of engagement with the National Center. Thematic hubs providing accredited courses and/or sponsoring Work-Learning-Service internships at their campuses (combined with low-residency terms at the National Center) will be provided hardware and software for a full service distributed instructional technology laboratory for a capacity of up to 30 students. Host campuses will be provided with a distributed conference room technology for a capacity of 8, scalable to an instructional technology laboratory. All instructional technologies are designed to be interoperable across distributed locations. The Institute, in the course of the development of this concept, has interviewed greater than 30 colleges and universities with appropriate academic programs.

SECTION 9: SUMMARY OF QUALIFICATIONS

9.1. Management Team: Section 9, Summary of Qualifications, describes the qualifications of the project principal and other team members to meet the Presidio Trust's project objectives, and provides information concerning each key management team member, including name, title, company and the background of their respective organizations. Each team members' experience with projects of similar scale and complexity are detailed in attached exhibits referenced for each subsection listed below.

9.2. Renewable Nations Institute, Allan E. Baer, President and Chief Executive Officer: Mr. Baer is a licensed general contractor and real estate developer (California: 1977-2001), and an energy services contractor (Vermont: 1990-2018), owning, operating and/or managing several energy services companies: Telos Energy Conservation Housing, Chispa Investment, Inc., Applied Energy Management, Inc., NuSun Energy Services, EcoSage Corporation and SolarQuest L3C. Mr. Baer managed the U.S.-Africa Energy Ministerial Meeting and Village Power 2000 in partnership with the White House Millennium Council and the U.S. Department of Energy (1999-2001). From 2002-2009, Mr. Baer co-developed Project ERGAL (Renewable Energy Galapagos) in collaboration with the Global Sustainable Electricity Partnership (formerly the e8 Network for Expertise on the Global Environment), the United Nations Foundation (UNF), the United Nations Fund for International Partnerships (UNFIP), the United Nations Development Programme (UNDP), and the Government of the Republic of Ecuador (Global Environment Facility Project ID #1135). From 2009-2015, Mr. Baer has been conducting research on STEM education and workforce development in the energy services sector, with partial funding from the National Science Foundation (#DRL-083376). Since 2011, Mr. Baer has been working in collaboration with the United Nations Secretary General on the United Nations Sustainable Development Goals (Partner ID#SDGAction13739) and as a Proud Partner of the Sustainable Energy for All Initiative, a partnership with the United Nations and the World Bank. (See Exhibit B, Renewable Nations Institute.)

9.3. AECOM, Linda S. Peters, Vice President, San Francisco Cities Program Director: AECOM is a fully integrated infrastructure firm consisting of a global network of 87,000 design, engineering, construction and management professionals partnering with clients in more than 150 countries worldwide. AECOM constructs high-performance buildings and infrastructure, resilient communities and environments, and stable and secure nations. AECOM is a publicly traded firm with a \$6 billion Market Cap, \$18.2 billion of revenue (FY 2017) and is ranked #164 by Fortune 500 Magazine.

AECOM (through its legacy firm, URS) has successfully provided technical expertise to the Presidio Trust since 1999. Over AECOM's almost 20-year-long history of service to the National Park Service and Presidio Trust at the site, the Company has been an important partner in the evolution of the Presidio from a military installation to a key element in the national park. During this partnership, AECOM has held over a dozen separate contracts at the Presidio, including: NEPA and related environmental consulting services for implementation of the Presidio General Management Plan; environmental, engineering design, and construction management services; remedial, wetland, and archaeological investigations; geotechnical engineering services; and preparation of construction plans and specifications. AECOM's current Engineering, Architectural, Environmental, and Construction Management Services contract includes design, upgrade, repair, and refurbishment of the infrastructure, buildings, and natural areas within this 1,480-acre site. (See Exhibit C, AECOM Qualifications.)

Ms. Peters, a San Francisco Native, has been based in the company's San Francisco Office since 2009, and has successfully led projects and programs in the Bay Area, as well as on National Parks in the Southwest. With more than 20 years of consulting experience, including a background in cultural resources, Linda currently serves as AECOM's San Francisco Cities Program Director. In this capacity, she directs AECOM's staff of architects, engineers, designers, planners, scientists, and managers to serve clients within San Francisco. In addition, she focuses AECOM's design, construction, finance, and operations teams toward successful delivery of integrated transformational projects in the City of San Francisco.

9.4. Brooks Street, Neil Brandom: Brooks Street is a fully integrated real estate company founded in 2002 with \$1B+ in California real estate under active management and best known in Northern California for the redevelopment of the Napa Valley Wine Train. Neil Brandom brings more than 25 years' experience in land development, engineering, management, infrastructure, entitlement and finance to his role at Brooks Street overseeing the day-to-day management of the firm's

growing portfolio of real estate assets. Brooks Street is prepared to deploy resources working with Renewable Nations Institute as co-lead developer in the due diligence investigation of the Fort Scott campus pursuant to a long-term lease agreement with the Presidio Trust. (Exhibit D, Brooks Street: Company Overview.)

9.5. Swenson Builders, Case Swenson: Swenson Builders has been one of the top real estate development and construction firms in Northern California for over 100 years, providing a comprehensive approach to San Francisco Bay Area construction and development projects under a Design-Develop-Build platform designed to deliver the highest value to clients, communities and partners. Case Swenson is the fourth generation to lead the Swenson family construction enterprise. Swenson will serve as the representative of the Renewable Nations Institute for the adaptive reuse development project being proposed at Fort Winfield Scott. Services may include, but not be limited to, co-developer, financial advisor, co-project manager, seismic technical advisor and/or Clerk-of-the-Works, as appropriate.

9.6. University of North Texas, Gerald Knezek: The Institute for the Integration of Technology into Teaching and Learning (IITTL) of the University of North Texas (UNT) will co-lead the National Center's educational consortium. IITTL is chartered by the UNT Council of Deans to conduct research and implement best practices in the area of teaching and learning with technology. Gerald Knezek, Ph.D., the UNT Regents Professor of Learning Technologies and Director of the IITTL, is one of the Nation's top leaders in the integration of technology in teaching and learning. Since its founding in 1999, IITTL has housed a Capacity Building and Implementation Grant in the Preparing Tomorrow's Teachers to Use Technology Program, an evaluation contract for a large Technology Innovation Challenge grant—Key Instructional Design Strategies, and an Intel Pre service Teach to the Future grant. IITTL has also been a collaborator on a PT3 grant directed by the University of Nevada-Reno and was closely affiliated with an NSF gender/equity grant—Bringing Up Girls in Science. Current IITTL projects include MSOSW Going Green! Middle Schoolers Out to Save the World, Fab @ School Classroom and STEM Pre-Academy. Additional projects include a Fund for the Improvement of Postsecondary Education simMentoring Grant, an NSF Disabilities Research grant on Simulated Enhanced Training for Teachers, and an NSF Innovative Technology Experiences for Students and Teachers project, Middle Schoolers Out to Save the World. The proposed partnership with the IITTL at UNT will assure the development and operations of an inclusive national distributed learning platform at Fort Scott that will meet the demanding educational delivery standards across a diverse user platform. (Exhibit E, University of North Texas, Consolidated Annual Financial Reports: 2015-2017.)

9.7. Cornell University, Dr. Paul F. Mutolo: The Energy Materials Center at Cornell University was founded to advance the science of energy conversion and storage by understanding and exploiting fundamental properties of active materials and their interfaces. Researchers at Energy Materials Center span two colleges, and five departments. Together, they comprise teams that are focused on understanding and developing novel materials to improve energy technologies. The Center develops long-term partnerships with industry leaders to speed the development and adoption of novel materials into solutions for advanced energy technologies. Our partners range from small, New York State businesses to global industry leaders. Our center has launched several startups in this technology sector, including Conamix (Ithaca, NY); Ecoelectro (Ithaca, NY); and Lionano (Boston, MA). Other industry partners include: General Motors (Pontiac, MI); Proton Onsite (Wallingford, CT); and Corning, Inc. (Corning, NY). As a proposed co-lead consortium partner of the National Center for Work-Learning-Service, the Energy Materials Center at Cornell will be instrumental in increasing workforce capacity in the rapidly growing battery and energy storage industry, and in helping forge new partnerships at the National Center with leading industries in this field. Paul Mutolo is the Director of External Partnerships for the Energy Materials Center at Cornell.

9.8. Vital CleanTech Ventures, Tom McGrath: Vital CleanTech Ventures (VITAL) is currently providing Project Development and Project Management services for the Renewable Nations Institute, including development of the Institute's Proud Partner commitment to Sustainable Energy for All (SEforALL), a joint venture of the United Nations and the World Bank in support of initiatives for renewable energy, energy efficiency and energy access. VITAL will provide oversight of the sustainable energy Project Incubator proposed at the National Center. Tom has designed and developed renewable energy, lighting systems, film productions and cleantech projects in 34 countries over 30 years, including village-level community Solar Thermal Energy case studies in Ithaca (NY) for deployment in African villages.

SECTION 10. STATEMENT OF COMPLIANCE

10.1. Statement of Compliance to Project Objectives: The Institute further acknowledges and takes responsibility for the Fort Scott design criteria as set forth in the *Request for Concept Proposals*, Public Realm and Visitor Experiences, Items 1-5, and the *Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings*. The Institute shall be in compliance with the general terms and conditions of *The Presidio Trust Act*, *Final Environmental Impact Statement* findings, the *Fort Scott Site and Landscape Improvement Strategy*, *Presidio Trails and Bikeways Master Plan and Environmental Assessment* criteria, and the *Fort Scott Sustainable Opportunities Report* guidelines. The Adaptive Reuse Plan summarized herein and attached hereto as Exhibit 1, Building Occupancy and Reuse (Conceptual Layout), utilizes preliminary floor plans contained in the *Fort-Scott-Capacity-Study-TEF-2011*. Building occupancy and reuse is subject to Presidio Trust approval and conditions that may be enforced by other federal and state-permitting agencies, as may be applicable. In the context of the mission of the National Institute to develop high-performance energy efficiency and renewable energy projects, the adaptive reuse of Fort Winfield Scott will showcase the application of sustainable energy strategies to the built environment with the goal to achieve net-zero energy performance through the application of on-site and off-site decentralized services and high-efficiency building performance.

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