

Welcome to the Green Globe Solutions / IPP Presentation at 28th Annual PPA Conference



Date: July 4, 2019
Location: Rarotonga / Cook Islands

American Samoa – A'Asu Wind Power Project



- Project Name: A'Asu Wind One Power Project
- Project Owner: Green Globe Solutions American Samoa
- Project Type: Wind Power with Battery Storage
- Project Energy Buyer: American Samoa Power Authority (ASPA)
- Site Location: Lualemaga Family Land in A'Asu (Best Island Site)

- Green Globe Solutions American Samoa Inc. (GGS ASI) is a global renewable energy developer that originates, develops, owns and operates wind farms, solar farms, hydroelectric facilities and geothermal facilities in Canada, the United States, Caribbean and Pacific Islands.
- GGS ASI's renewable energy development team, has more than 250 years of combined renewable power development experience, including the last nine years in American Samoa and Oceania Region.
- GGS ASI has a long understanding of American Samoa and regional utility challenges and deep relationships with government, utility, regulators, landowners, and constructors.
- Our vision is to provide clean, low-cost and reliable renewable energy solutions by originating, developing and operating projects in under-served regions.*





Chris Thunken, Director GGS ASI

- 30+ years of engineering and renewables development largely in American Samoa and the Pacific Islands
- Previously Manager at Canplant Manufacturing Operations at Starkist Samoa / Heinz USA. Amongst other, responsible for project planning, design, construction and financing of renewable energy projects spanning from Hawaii to Micronesia.
- Locally based in American Samoa
- Designed and completed 11 wind projects in North America and Europe including Benign Energy Heritage, 291MW and the NRVC Vineland Project 230MW.



Paul Blaha, Director GGS ASI

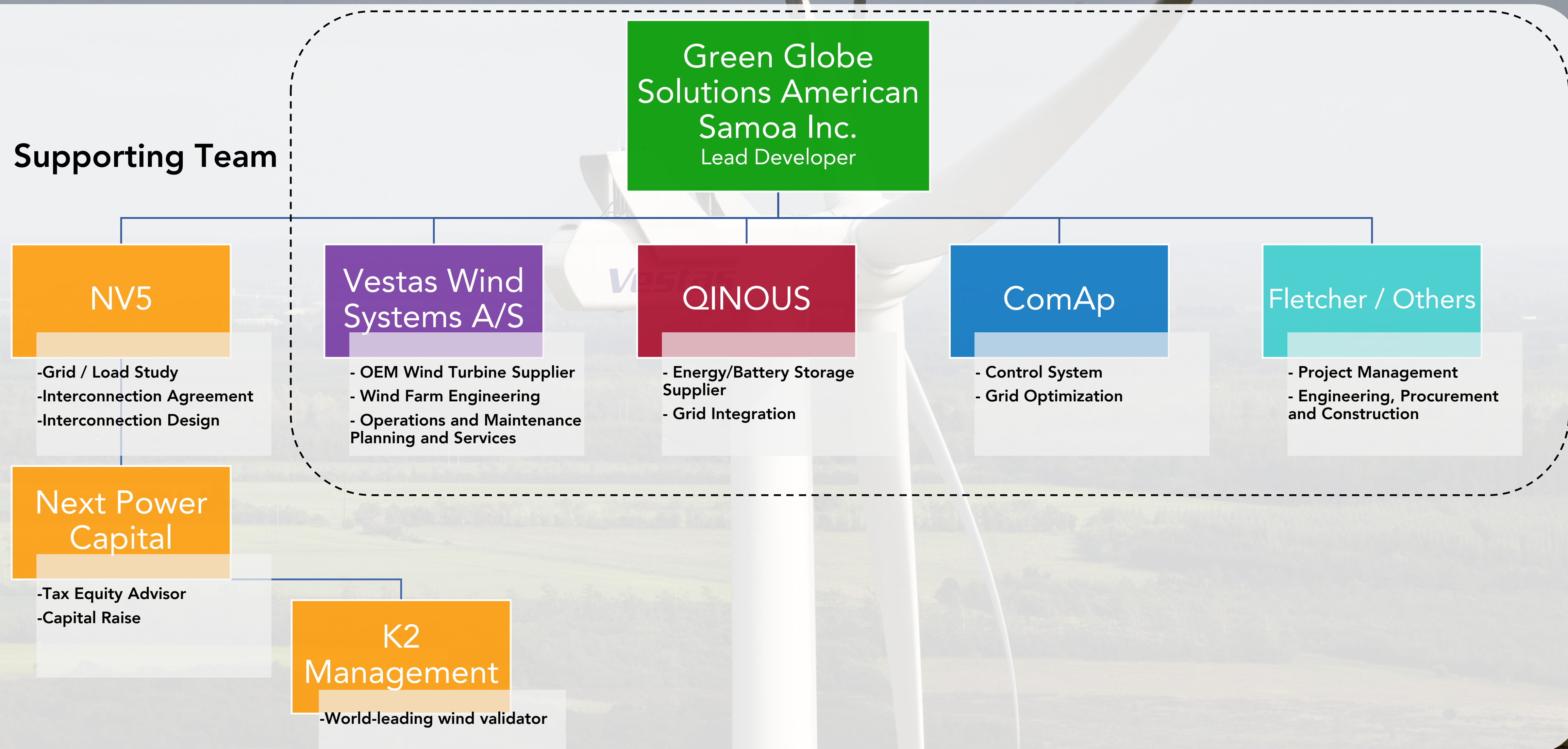
- Nearly 30 years experience in the energy and renewables space
- Developed 3,000+ MW of power globally on three continents
- Grew a start-up conventional and renewable power company to over \$100M annual EBITDA over 10 years from 1997
- Successful track record with First Nations development for over 20 years in Canada
- Biz 1 on 1 interview: <http://archercleantech.com/Paul%20BlahaTVEdit.mp4>



Leifi Aliitama Sotoa, Director GGS ASI

- 35+ years experience engineering, design, procurement, construction and management of utility projects and renewable energy
- Director of the Territorial Energy Office of the American Samoa government working to connect government and Samoa communities to financial and technical resources to advance energy technologies and efficiencies including the State Energy Program, Low-Income Home Energy Assistance Program and the Weatherization Assistance Program.
- Chairs the American Samoa Renewable Energy Committee established to develop a long term strategic and action plan that creates energy future for American Samoa.

A Nexus of World-Leading Renewable Services Providers



Vestas

One of the worlds largest
wind turbine suppliers.
Exclusive to GGS ASI in
Oceania Region

Fletcher / Others

+50 years regional experience
in engineering procurement
and construction

Qinous

Rolls Royce backed battery
expert

ComAp

World leading in diesel
renewable integration and
grid optimization

Technology Providers

Vestas brings to the team a proven track record as one of the world largest wind turbine suppliers with expertise in wind farm engineering, operations, maintenance, planning and services. Vestas is the energy industry's global partner on sustainable wind energy solutions. Vestas designs, manufactures, installs, and operates wind turbines across the globe. With 94 GW of wind turbines installed in 79 countries over nearly 40 years, Vestas has installed more wind power than anyone else.

Fletcher & McConnell Dowell brings to the team significant experience in Project Management in addition to expertise in Engineering, Procurement and Construction. Fletcher has been in operating for over 40 years in American Samoa and McConnell Dowell has been in operation in American Samoa for over 30 years with over 120 employees island based with a full range of mechanical plant and equipment to service this project. They have the ability to design and construct of all the key elements of the project including, but not limited to the roads, foundations, building and turbine installation.

QINOUS brings to the team expertise in energy/battery storage as an established supplier with significant experience in grid integration. QINOUS is a product and system solution provider who develops, manufactures and distributes intelligent, fully-integrated plug and play battery storage systems for commercial, industrial and utility applications. Rolls-Royce recently expanded position in QINOUS: <https://www.rolls-royce.com/media/press-releases/2018/01-10-2018-rr-expands-its-position-in-the-microgrid-market-and-invests-in-start-up-qinous.aspx>

ComAp brings to the team expertise on the control system for diesel/renewable integration in addition to grid optimization. They design and manufacture control products for power generation and diesel and gas engines, along with associated accessories and software.

Working With Our Stakeholders

Our Beliefs

- 🌱 Involving communities in activities that affect them
- 🌱 Transparency
- 🌱 Early engagement
- 🌱 Mutual benefit
- 🌱 Sharing up-to-date project information

Objectives

- 🌱 Engage early
- 🌱 Understand concerns, interests and values of communities we work with
- 🌱 Develop long-term positive relationships
- 🌱 Be responsive to community concerns

Goal

- 🌱 To be a trusted member of the communities where we operate by demonstrating our commitment to building and maintaining positive, meaningful relationships

Approach

- 🌱 Build our knowledge of communities
- 🌱 Proactively engage with key stakeholders to share project information
- 🌱 Engage with community leaders on a regular basis
- 🌱 Understand development plans, visions and/or needs of community
- 🌱 Collaboratively work together to identify opportunities for shared benefit



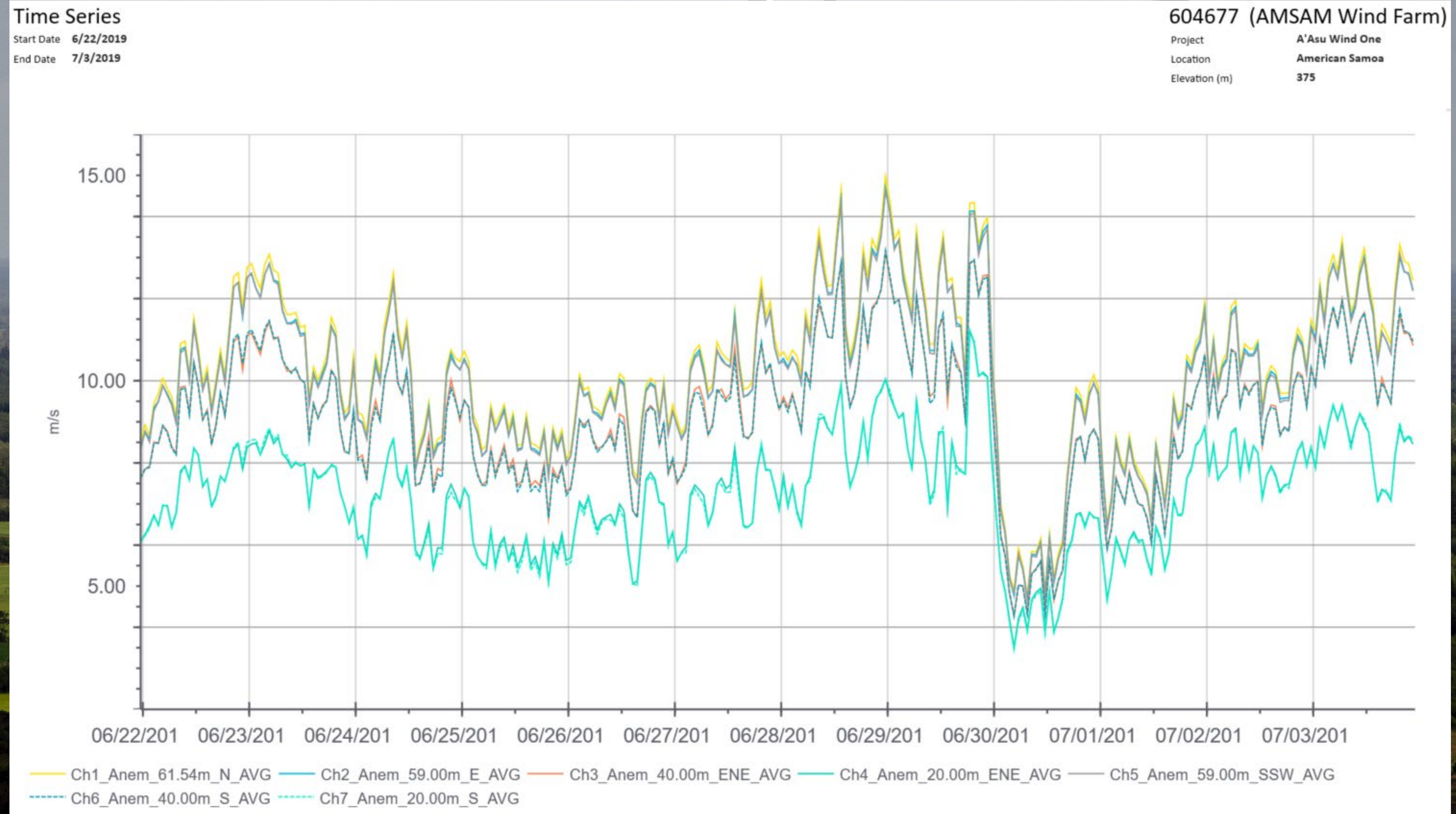
What Makes A Successful Wind Project

A Successful wind power project requires:

- ✓ A strong wind resource
- ✓ Access to transmission lines
- ✓ An engaged and supportive community
- ✓ Consideration as an alternative to solar projects



Sample Wind Data – American Samoa



What are the typical benefits of wind development?

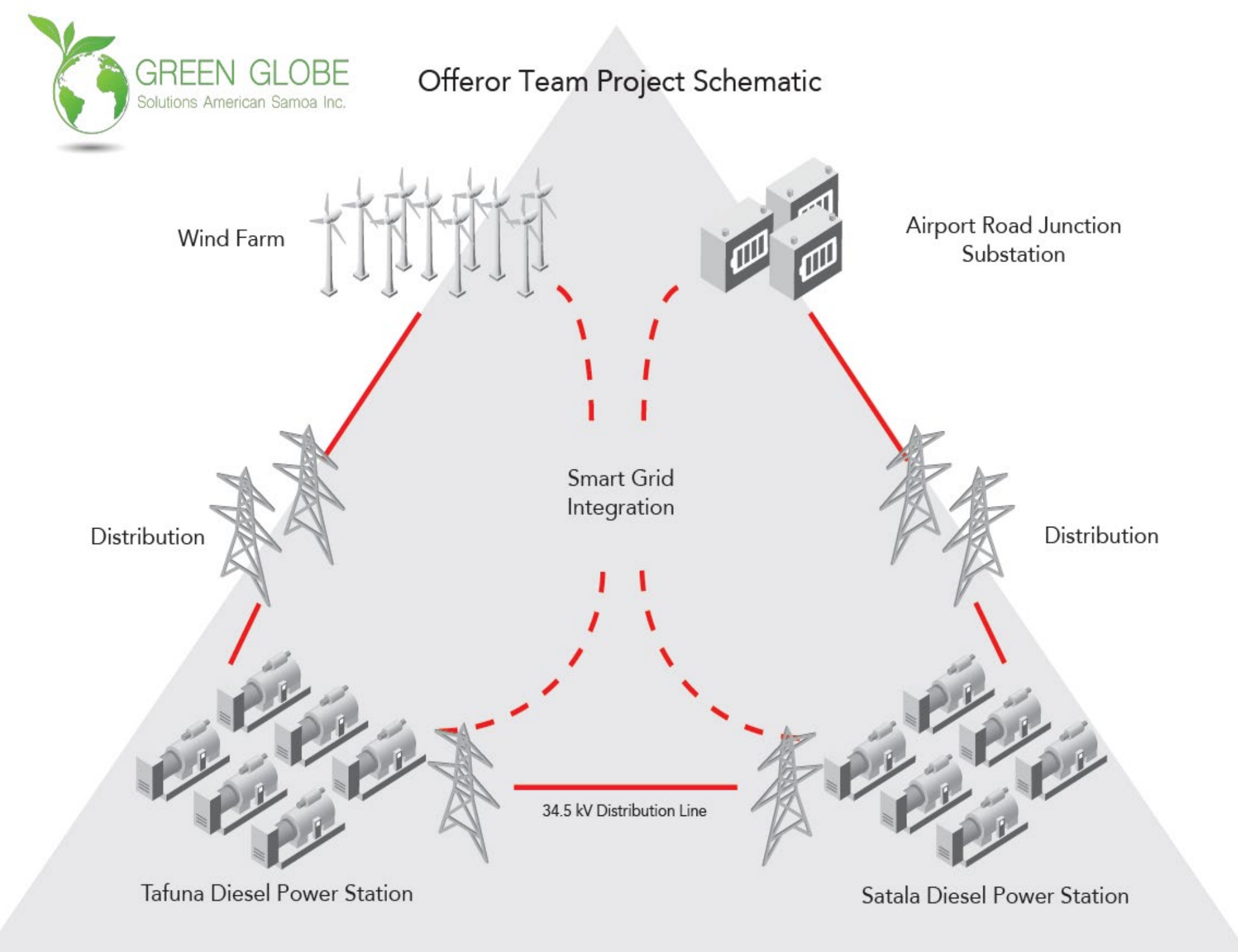
- **Employment** – Temporary jobs during construction and permanent jobs associated with the operations and maintenance of the Project. There is the potential that local contractors would be involved in the construction of the Project.
→ Local supplier procurement and employment
Significant job creation during construction
Numerous permanent jobs created
- **New Investment** – In the form of local services and supplies such as infrastructure improvements, fuel, accommodation, meals and supplies for employees, construction personnel, and contractors who will spend time in the local communities.
→ Up to \$110M USD Capital
- **Landowners and Community** – Wind turbines provide additional revenue to landowners and have a minimal impact on current land use. Wind turbines are compatible with other land uses and can serve as a boost for rural economic development.
→ 16.9 cents cheaper for the end user per kilowatt hour than diesel power, published by ASPA
- **Municipal Tax Revenues** – Municipal taxes paid by wind companies to rural communities can be important, and the Project does not increase demand on municipal services or public works such as sewer and water upgrades. Payments from a wind project can be directly allocated to increasing local services or stabilizing local tax rates.
→ Significant Tax Revenues
- **Clean Energy** – Wind energy provides societal benefits by offsetting harmful emissions such as carbon dioxide, oxides of nitrogen, and sulphur dioxides that are created through conventional, thermal power generation.
→ Renewable energy from 5% to over 60%
- **Stability and Predictability** – Wind energy costs are stable and predictable over the long term because there are no fuel costs. Wind energy helps to diversify and decentralize our power supply.
→ 25+ years of sustainable and reliable energy

The Proposed A'asu Wind Power Project

Proposed project details:

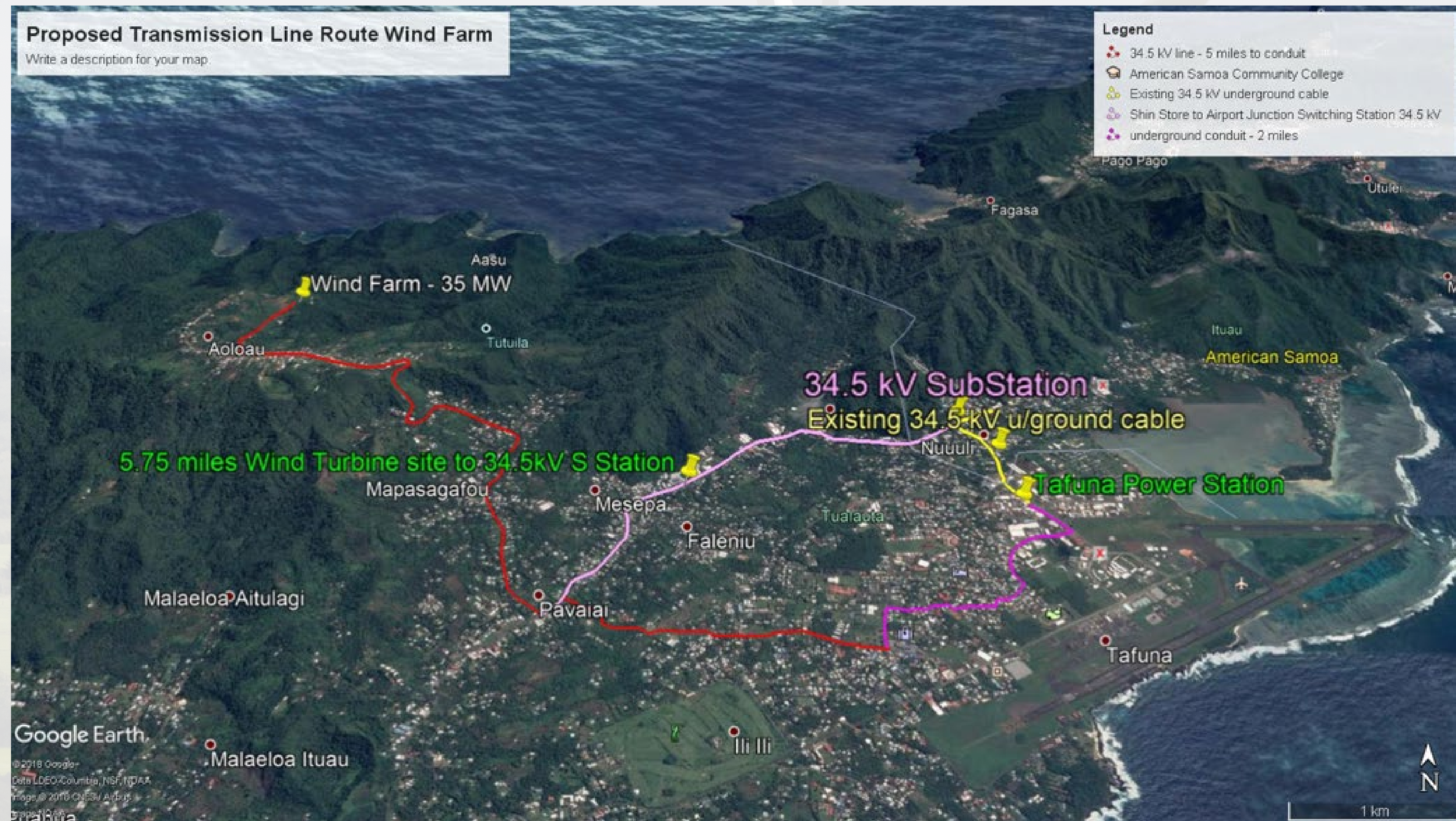
- **Capital Investment:** up to \$110M USD
- **Size:** 30 – 42 megawatts (MW)
- **Number of turbines:** up to 10 – 4.2 MW
- **Hub height:** up to 92 m
- **Rotor diameter:** up to 120 m
- **Battery Storage:** 26 – 40 megawatt hours (MWh)
- Access and temporary construction roads
- 1 main project collector substation at Airport Road Junction
- Overhead electrical collector system from turbines to project collector substation
- Connection infrastructure from project collector substations to the American Samoa Power Authority transmission system

The planned A'asu Wind Power Project will deliver over 100,000MWh of renewable energy generated electricity to the grid via a proposed substation, connected to the 34.5 kilovolts (kV) ASPA interconnected electrical system.



AMERICAN SAMOA - A'ASU WIND POWER PROJECT

Island Power System



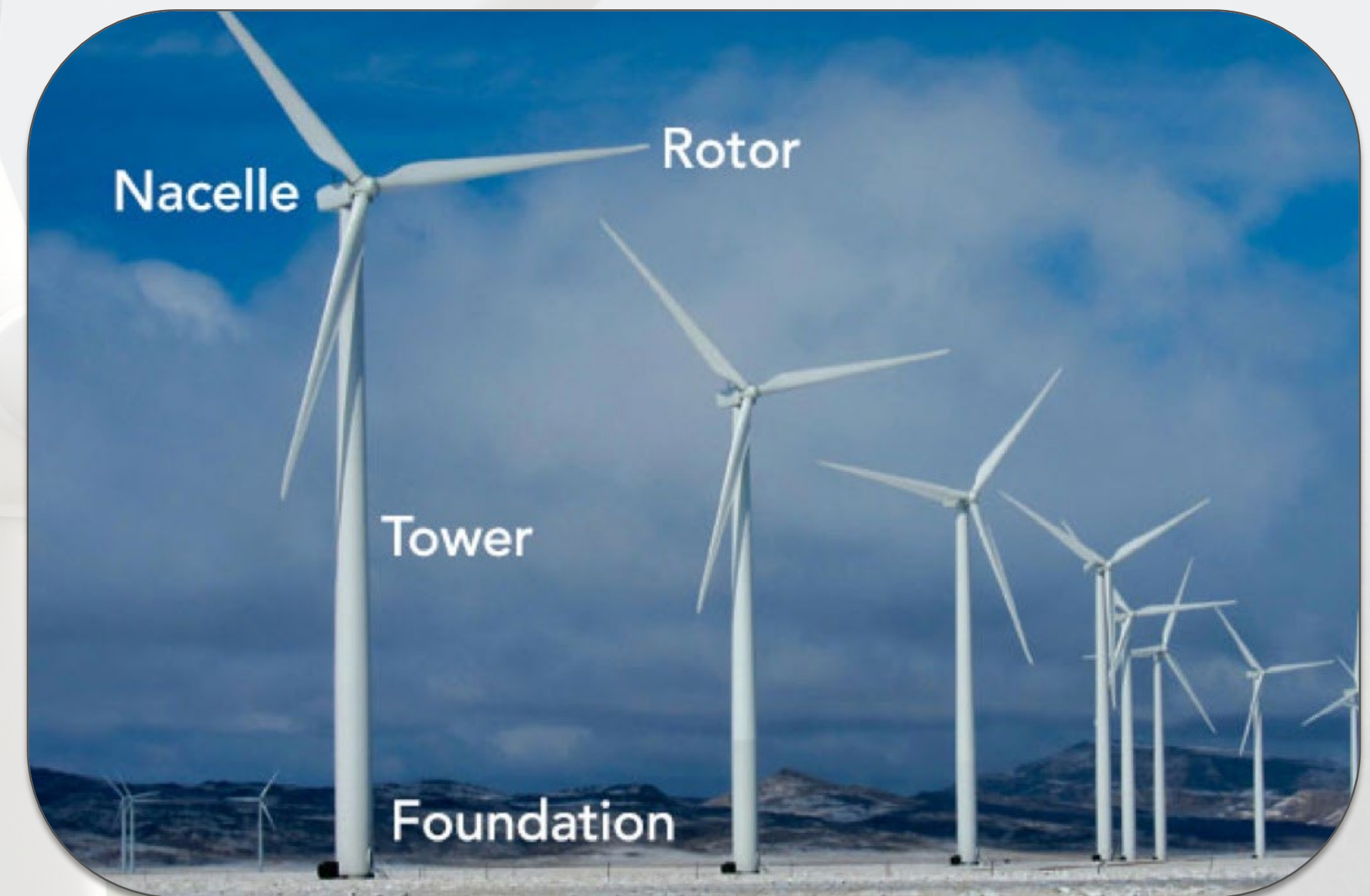
Initial Turbine Siting



Wind 101 – How Does it Work?

Turbines consist of four main components

1. Foundation: concrete and rebar to provide strength
 2. Tower: steel tubular sections up to 110m tall
 3. Nacelle: houses the generator
 4. Hub Rotor: diameter up to 145m
- Turbines convert the kinetic energy in the wind into mechanical rotation, then to electrical energy. Wind lifts and turns the blades, the blades turn the rotor, the rotor is connected to the generator and the generator converts rotational energy to electricity.
 - Turbines are programmed to automatically rotate to face the wind direction, optimizing generation.
 - Power output from multiple turbines are collected via low voltage cables to a common substation. The transformer at the substation boosts the voltage to match the transmission network.





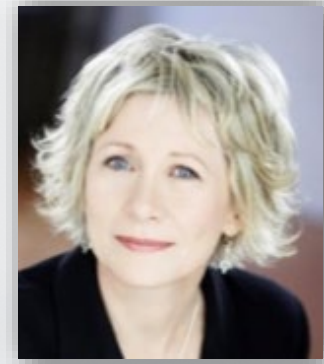




Our Worldwide Office and Supporting Staff



Michael Schaefer
Solar-PV Design
& Procurement



Lauren Nickel
Director



Peter Sherba
Director



Dave Ashby
Investor Relations



Wayne Tinker
VP, Commercial



Karen Parker
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Stewart Powell
Chief Administration
Officer



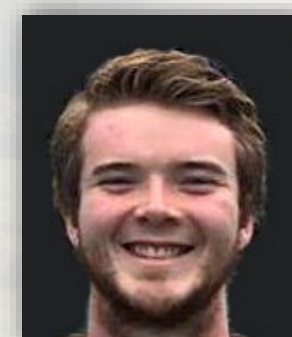
Ron Loudoun
President, Director



Paul Larkin
Chairman of the Board,
Director



Mark Hirsch
Project Manager



Myles Hanna
Project Engineer, E.I.T



Alyssa McGimpsey
Administrator



Peder Hansen
Technical Specialist



Temilade Adedeji
Controller

Thank you for having us at the 28th annual PPA conference in Rarotonga.

For more information please visit www.greenglobesolutions.com, or contact Chris Thunken directly at chris@greenglobesolutions.energy.



Proposed Project Timeline

| Phase I – Project Development | Phase II - Construction |
|--|---|
| <ul style="list-style-type: none">• Proposal submission and award by ASPA• Wind Resource Validation• Power Purchase Agreement with ASPA• Land Agreements / Land use permitting• Environmental Studies• Geotechnical Work• Financial Close and Ordering | <ul style="list-style-type: none">• Land preparation and road work• Foundations and underground collector system• Delivery and installation of Turbines• Electrical substation and transmission line• Battery storage installation• Fencing and commissioning• Commercial Operation Date 2022 |



What government bodies and agencies need to approve or review wind development in American Samoa?

- Project Notification and Review System (PNRS)
- American Samoa Power Authority (ASPA)
- Department of Land and Natural Resources (DLNR)
- Department of Marine and Wildlife Resources (DMWR)
- Department of Parks and Recreation (DPR)
- American Samoa Environmental Protection Agency (ASEPA)
- Environmental Quality Commission (EQC)
- American Samoa Historic Preservation Office (ASHPO)
- Department of Health (DOH)
- Department of Public Works (DPW)
- Department of Commerce (DOC)
- American Samoa Coastal Management Program (ASCMP)
- Federal Aviation Administration (FAA)
- United States Fish and Wildlife Service (USFW)
 - Endangered Species Act (ESA)
 - Migratory Bird Treaty Act (MBTA)
- Department of Defence (DOD) Siting Clearinghouse

PROJECT NOTIFICATION REVIEW SYSTEM (PNRS)
AMERICAN SAMOA GOVERNMENT
DEPARTMENT OF COMMERCE

LAND USE PERMIT

NO: **19 6008 L**

THIS PERMIT IS ISSUED TO **Green Globe Solutions AS c/o Maneafaiga*******
MAILING ADDRESS **P.O.BOX ASPA** PHONE: **258-7533**
THIS PERMIT ALLOWS WORK ON LAND LOCATED IN **Aasu** **Leasina**
VILLAGE COUNTY

PHYSICAL BOUNDARIES ARE SET FORTH AND DESCRIBED IN THE APPROVED SITE PLAN FOR **GGS AS**, WHICH IS ATTACHED AND INCORPORATED INTO THE TERMS OF THIS PERMIT.

THE WORK PERMITTED IS: **Tower & Fence*******

☒ ADDITIONAL DESCRIPTION & CONDITIONS ATTACHED
☒ SITE PLAN IS INCORPORATED AS PART OF THIS PERMIT.

SPECIAL CONDITIONS WHICH MUST BE MET: *DEVIATION FROM THE APPROVED SITE PLAN IS PROHIBITED.*

REVIEW

RECEIPT # _____ PROCESSING FEE: **\$25.00**
ASCMP OR CZM **[Signature]** DATE: **3/15/19**
DEPARTMENT OF COMMERCE/ ASCMP GRANTS PERMISSION TO PERFORM THE WORK DESCRIBED ABOVE BY: **[Signature]** DATE: **[Signature]**
DIRECTOR OR DESIGNEE

NOTICE - CAUTION

The work approved by this permit must begin 1 year and be completed within 2 years of the date of approval by the Director of Commerce. If the work is not commenced within 1 year of the date the permit shall be voidable by the Board. If the work is discontinued for a period off 1 year or longer the permit is considered abandoned and a new land use permit application is required. If the project is not completed within 2 years of the date of approval the permit may be extended by request of the applicant made within 6 months of the permit expiration day. This permit authorized **ONLY** the work specified. Separate permits are required for any work not described in this permit.

FA'AALIGA MA LAPATAIGA

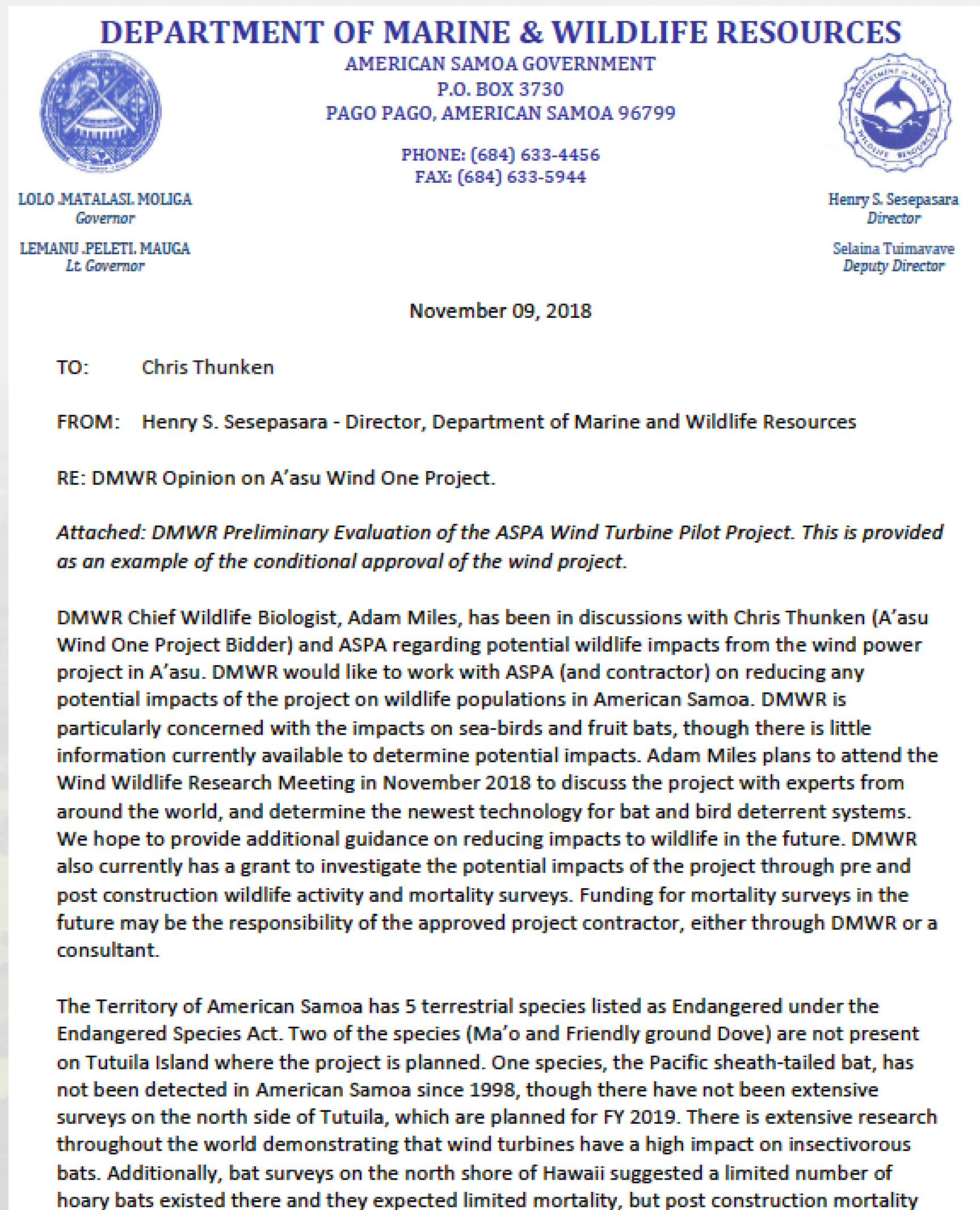
O le galuega ua pasia i lenei pemitā e tatau ona amata i totonu o le 1 tausaga, ma mae'a lelei i le 2 tausaga. I le lua tausagamai le aso na pasia ai. Afai o se galuega e le'i mafai ona fa'atinoaina i totonu o le 1 tausaga mai le aso na pasia ai, o le a fa'aleaogaina lea pemitā. Afai o se galuega ua le mafai ona fa'aauaina i totonu o le tasi (1) tausaga pe sili atu fo'i, o lea pemitā ua tulaga tu'ua, ma e tatau ona faia se talosaga fou mo se isi pemitā. Afai o se galuega e le'i mae'a i totonu o le 2 tausaga mai le aso na pasia ai, ua tatau i le e ana le pemitā ona talosaga mo se taimi fa'aopoopo i totonu o le 6 masina mai le aso na fa'amuta ai le aoga o le pemitā. O lenei pemitā e fa'agataina ai **NA'O** galuega ua ta'ua ai, galuega uma e le'o ta'ua ai, e tatau ona fai se isi pemitā.

I agree to honor the terms and conditions of this permit. Ua ou malamalama i aiaiga uma o lenei pemitā:

[Signature] **[Seal]** **March 15th, 2019**
Signature of permittee Effective date

REVISED FORM 2014
DOC/CZM 2014

Regulatory Process (DMWR as an Example)



surveys have indicated that the 50-year projection for mortality was reached in only 5 years. Two ESA listed land snails (*Eua zebrina*, Tutuila Tree Snail, and *Ostodes strigatus*) are present on the island of Tutuila, but mainly use native forest with an intact canopy as habitat. While most of the project footprint is in disturbed, cattle grazed habitat, there is potential for native forest clearing at some sites. Snail surveys will have to be conducted to determine if ESA listed snails are present. DMWR does not have the authority to permit take under the US Endangered Species Act, therefore consultation with the USFWS will be needed in the future. DMWR will assist ASPA (and contractors) with these regulatory requirements where appropriate.

The site selected for the project is likely one of the best on Tutuila in regards to wildlife concerns. Most of the area has already been cleared and preliminary surveys of the proposed area indicate that it is not heavily used by wildlife, due to the lack of native forest. Additional systematic surveys are planned during FY 2019 to provide confirmation and estimate potential impacts. Mitigation measures may be required to reduce impacts depending on results of the post-construction mortality surveys. The USFWS may also require mitigation measures under the Migratory Bird Treaty Act. DMWR will assist in the consultation with the USFWS.

For clarification of this opinion, please contact my office at 633-4456.

Thank you,



Henry S. Seseapasara, Director, DMWR