Open Energy Systems and the Role of Clean Technology Innovation:

A Hawaii Case Study

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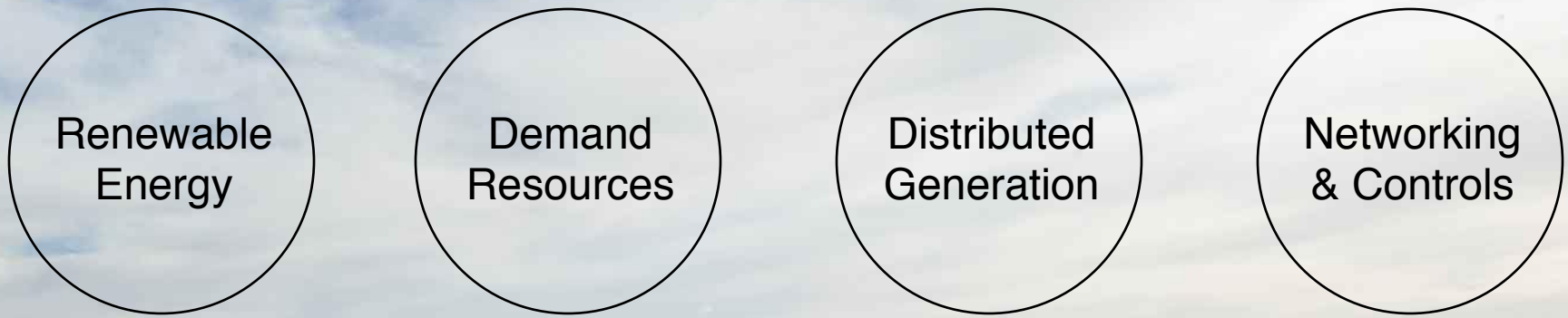
An Open Energy System Helps to Better Accommodate:



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An Open Energy System Can Lead To:

Economic Diversification

- Creation of Local Jobs
- Improved Energy Security
- More Predictable Cost
- Innovation Economy

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Hawaii's Energy System

Like Okinawa, Hawaii Has:

Strong historical and cultural roots unique to our national identities

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Like Okinawa, Hawaii Has:

A lack of economic diversity

Economies mainly driven by tourism & government expenditures

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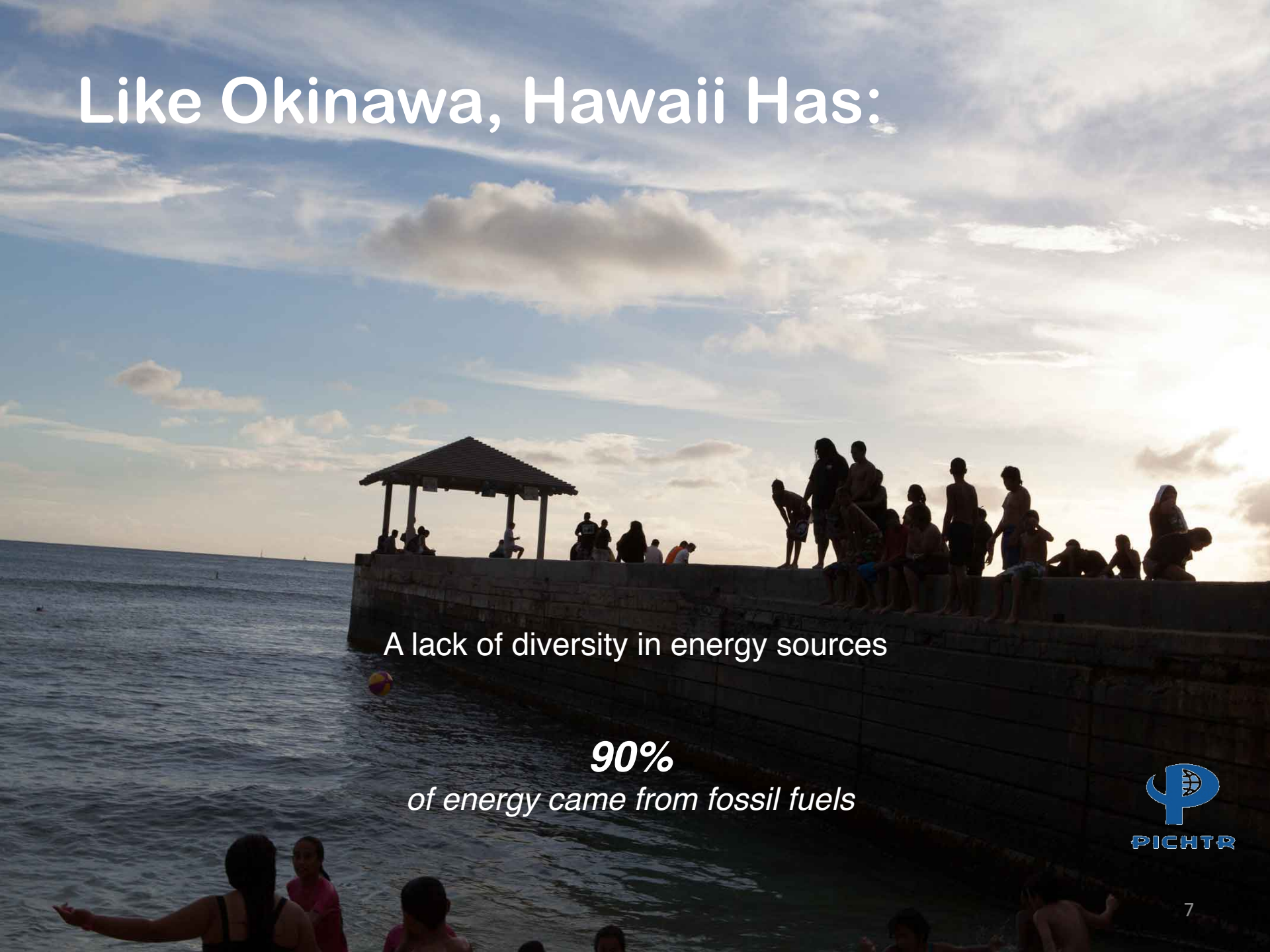
Like Okinawa, Hawaii Has:



A lack of diversity in energy sources

90%

of energy came from fossil fuels

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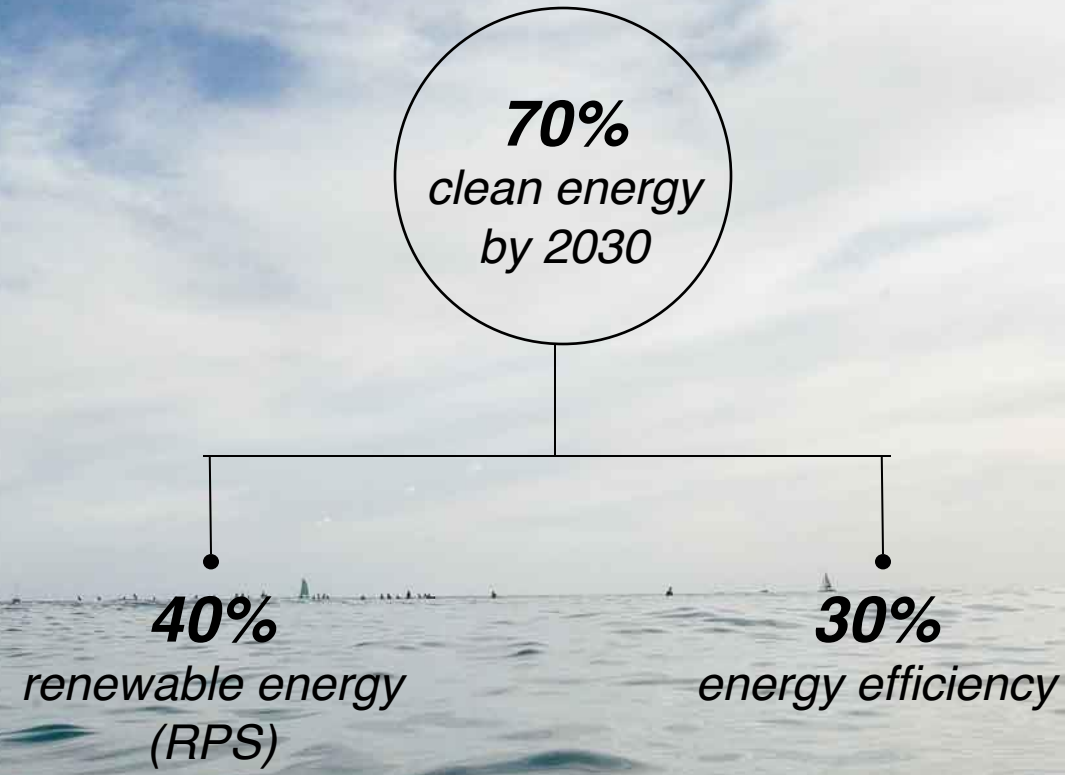
Hawaii's Energy Goals:

Hawaii Clean Energy Initiative (HCEI)



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Hawaii's Energy Policy:

Solar allowed on agricultural land

Barrel Tax of $1.05 for HCEI and food

Competitive bidding framework

Decoupling

Customer-site generation is not "public utility'

Inter-island cable regulation

Public Utilities Commission to consider diverse fossil fuels

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Results

Creation of Local Jobs

in clean energy economy job growth

2.4%
of state's jobs

11,145
green jobs in 2011

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Results

Improved Energy Security

in cumulative installed PV capacity per capita

in power purchase agreements per capita

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Results

More Predictable Costs

in solar water heaters per capita

in energy savings performance contracting per capita

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With an Open Energy System, Innovation Can Thrive

The success of innovators depends on access to market…

+ State policy can only do so much, tech companies need innovators

+ The utility and fuel companies are the major customer for grid technologies and fuels

+ R&D proves concepts, but commercialization requires demonstration on real systems

…the success of legacy institutions depends on innovation.

+ Technical challenges require new solutions

+ Solutions will be most effective if needs are communicated to tech sector

+ Collaboration and risk sharing can accelerate the deployment of new technology

PICHTR's History in Innovation

Pacific International Center for High Technology Research (PICHTR)

1983

Established by the legislature in 1983 to foster technology transfer in Asia Pacific, with particular interest in clean energy

PICHTR is supported by Japanese and U.S. governments, State of Hawaii, and private corporations.

PICHTR's History in Innovation

Pacific International Center for High Technology Research (PICHTR)

Today

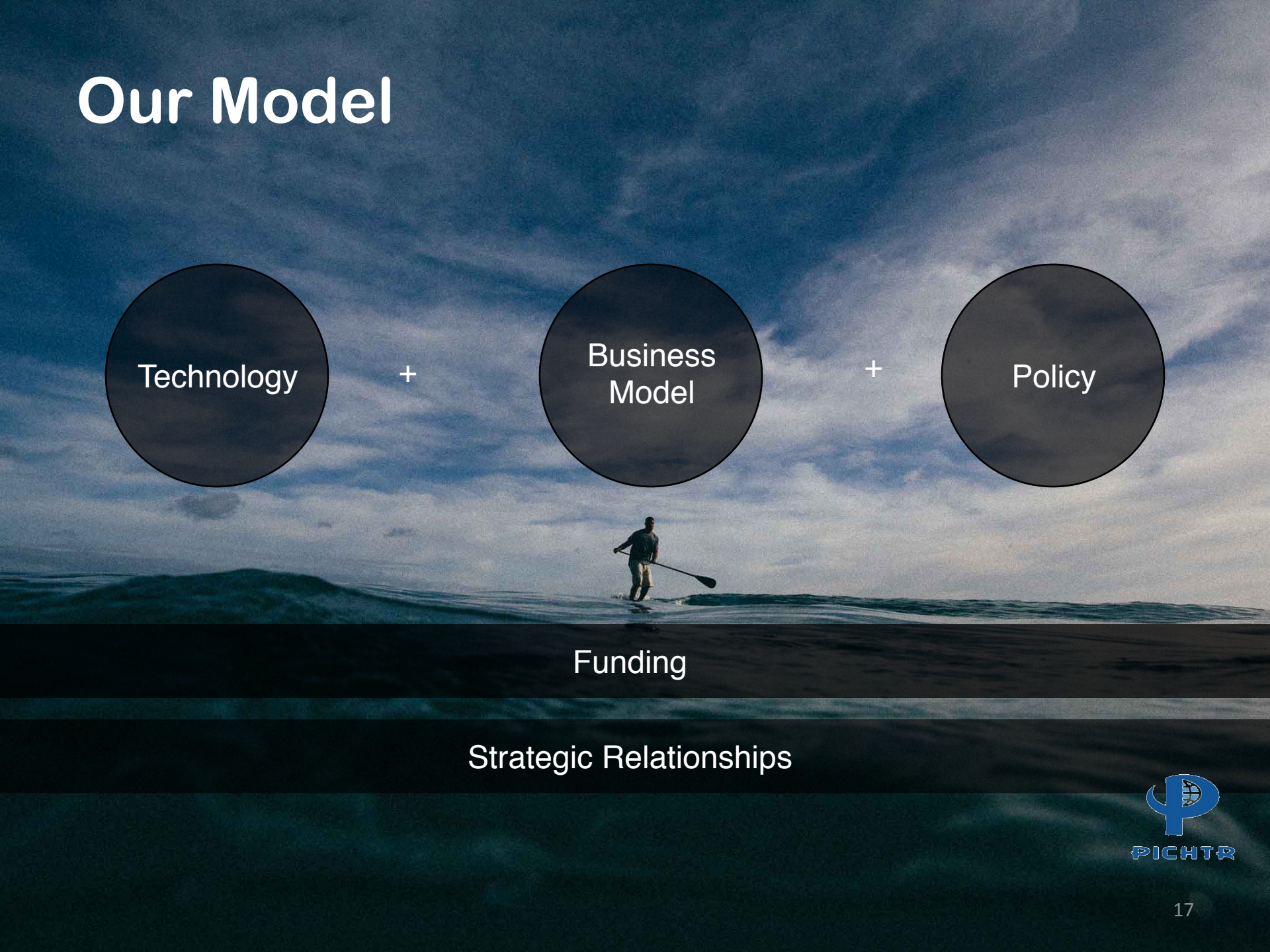
+ An effective catalyst for technology innovation and transfer in the Asia Pacific

+ Serving a well-defined need for market transformation in clean energy.

The Energy Excelerator

is a startup program dedicated to helping solve the world's energy challenges, starting in Hawaii.

Our Model


Technology
+
Business Model
+
Policy
Funding
Strategic Relationships

Funding

We help seed-stage companies (with a working prototype) find business models and growth-stage companies (with customer traction) fund projects

Seed stage

$30K to **$100K**

for go-to-market strategies

Growth stage

Up to **$1M**

+ cost share for demonstration projects

Strategic Relationships

We work with 50+ mentors from around the world

Energy

Investors

Startup services

Policy

Developing an Energy Innovation Economy

Program results as of 2012

17

Portfolio companies as of 2012

$40.9 M

Follow-on funding raised from 2010 to 2012

$18 M

Revenue generated in 2012

422

Jobs created as of 2012

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Our Portfolio

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Smart Grid & Energy Storage

stem

AMBRI

GEN-X ENERGY DEVELOPMENT LLC

referentia

AMBER_KINETICS

Shifted Energy

Ballast energy

HNU-ENERGY Harnessing the Power of Light

Energy Efficiency

people power

EFFORTLESS ENERGY

ibis NETWORKS

oroeco TURNING GREEN TO GOLD

PONO HOME

PYRO-E Waste Energy Recycling.

NAVATEK

Open Power Quality

BRIGHTLIGHT SYSTEMS

kWh analytics

Concentris systems

SPECTRUM 137

Transportation & Fuels

AUTOWATTS

terviva

better place

BIG ISLAND BIODIESEL

HAWAI'I GAS THE CLEAN ENERGY COMPANY

Kuehnle AgroSystems

conscious commuter

Solar & Water

SOPOGY

RENEWABLE WATER TECHNOLOGIES

Acclimate

Example 1: Stem, Inc.

stem

Stem optimizes energy savings and minimizes needed battery size through data analytics and advanced energy storage solutions.

Energy Excelerator Growth 2014

Raised $15M Series B

1 MW project in Hawaii in 2014

Example 2: Ibis Networks

Ibis Networks provides plug-load energy management services and secure data analytics for large commercial organizations by turning things off when they are not in use.

- Energy Excelerator Seed 2013
- Spun out of R&D firm (Oceanit)
- Energy Excelerator Growth 2014
- Helped Sheraton Waikiki save $200K

Our Business Model

1%
from our startups

Other US and international partners (*Okinawa)

ENERGY EXCELERATOR

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Similar Opportunities Can Be Created in Okinawa With the Right Leadership & Support

1. Share lessons learned to create a vibrant ecosystem in Okinawa for the deployment of new open energy architecture

2. Start an open dialogue supported by U.S. and Japanese governments, but lead by localities

3. Formalizing a relationship between parties in Hawaii and Okinawa for mutual cooperation around green open energy economic development

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