

INTEGRATED TIDAL ENERGY



INTRODUCTION TO SME
JASON HAYMAN
MANAGING DIRECTOR

INTRODUCTION TO SUSTAINABLE MARINE ENERGY

- Sustainable Marine Energy designs, delivers and operates turnkey tidal energy systems to provide island and coastal communities with a source of reliable, predictable and clean power.
- Founded in 2012; largest shareholders are SCHOTTEL HYDRO and Scottish Enterprise, alongside other UK-based investors
- 21 staff; UK, Germany, and Halifax, Nova Scotia (11 people)
- SME took over the Black Rock Tidal Power (BRTP) operation at the end of 2018 and renamed the company. BRTP, a SCHOTTEL subsidiary has been active in Nova Scotia since 2014.
- Sustainable Marine Energy (Canada) is responsible for the delivery of our projects in Canada, including;
 - Grand Passage demonstration project - 280kW PLAT-I
 - 9MW project at Fundy Ocean Research Centre (FORCE), co-development with Minas Tidal; Pempa'q Project, which will commence in 2020, and be built out in phases by 2023



GRAND PASSAGE – INSTALLATION BY HUNTLEY’S SUB-AQUA CONSTRUCTION



- Local vessels used; 65' self-propelled barge KIPAWO and local lobster boats used for towing and support

GRAND PASSAGE – ASSEMBLY AT A. F. THERIAULT



- Modular design enables rapid assembly and outfitting using local boatyards
- Can be launched as an entire unit, or final assembly can take place on the water if loaded out by water

GRAND PASSAGE – COMMISSIONING & OPERATIONS



- Ability to perform on-water commissioning and maintenance proven
- Accessible throughout the winter
- As operations are repeated the time to perform them has reduced and working windows increased – substantially
- SME now has an operations base in Westport with one full-time local employee (vessel operator)

RESULTS FROM GRAND PASSAGE DEPLOYMENT - ENVIRONMENTAL



- Operated under an authorization from Department of Fisheries and Oceans until May 24th
- Results being shared and new authorization for longer period applied for
- Operation of turbines during daylight hours only
- EMP largely based on visual observation;
 - Staff monitoring during turbine operation from onboard or shore station, with marine mammal observations performed every 30 minutes
 - Four cameras recording all turbines

- We did not observe, or see any evidence of, any marine animals passing our turbines, except for some jellyfish
- No contact between marine animals and the turbines observed
- Aquatera conducted a detailed review of representative segments of video from each day of operation
- Early days but promising; next steps are to test passive and active acoustics – necessary for FORCE

TIDAL ENERGY SYSTEMS R&D HISTORY

2012
 Development & testing of 1st gen SIT250 turbine



2014
 SIT MARINET testing in Strangford Lough



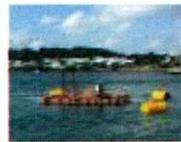
2015
 2nd gen SIT250



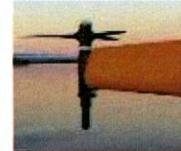
2016
 BUMWI project Indonesia



2016
 Sentosa project Singapore



2017
 SIT testing on PLAT-I



2017
 PLAT-I testing at Connel

2018
 PLAT-I moved to Canada



2019
 PLAT-I testing in Grand Passage



Design of PLAT-I 6.40



2012
 DECC EEF Funding won for first PLAT-O prototype

2014
 PLAT-O first assembled in Cowes Isle of Wight



2015
 PLAT-O test with 2 SIT turbines



2016
 First 4 RAPTOR anchors installed at EMEC for PLAT-O testing



2016
 PLAT-I Design begins

2017
 PLAT-I tank testing at FloWave Edinburgh

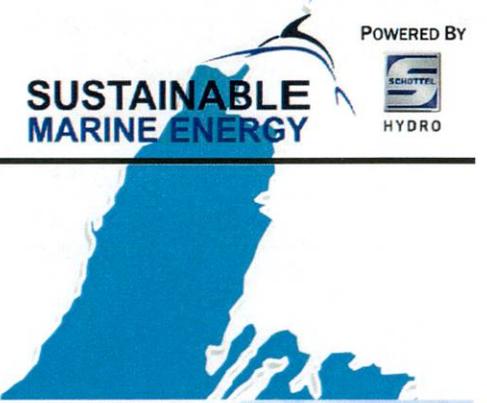


2017
 Raptor anchors install at Connel



PLAT-I installed in Grand Passage

INTRODUCTION TO SUSTAINABLE MARINE ENERGY (CANADA)



FORCE

- Pilot array project
- SMEC Berth (5MW)
- MTLP Berth (4MW)
- Grid connection in place (64MW)
- Feed in Tariff CAD530/MWh

GRAND PASSAGE

- Test and demonstration site
- Moderate resource
- PLAT-I 4.63-280kW

Parrsboro

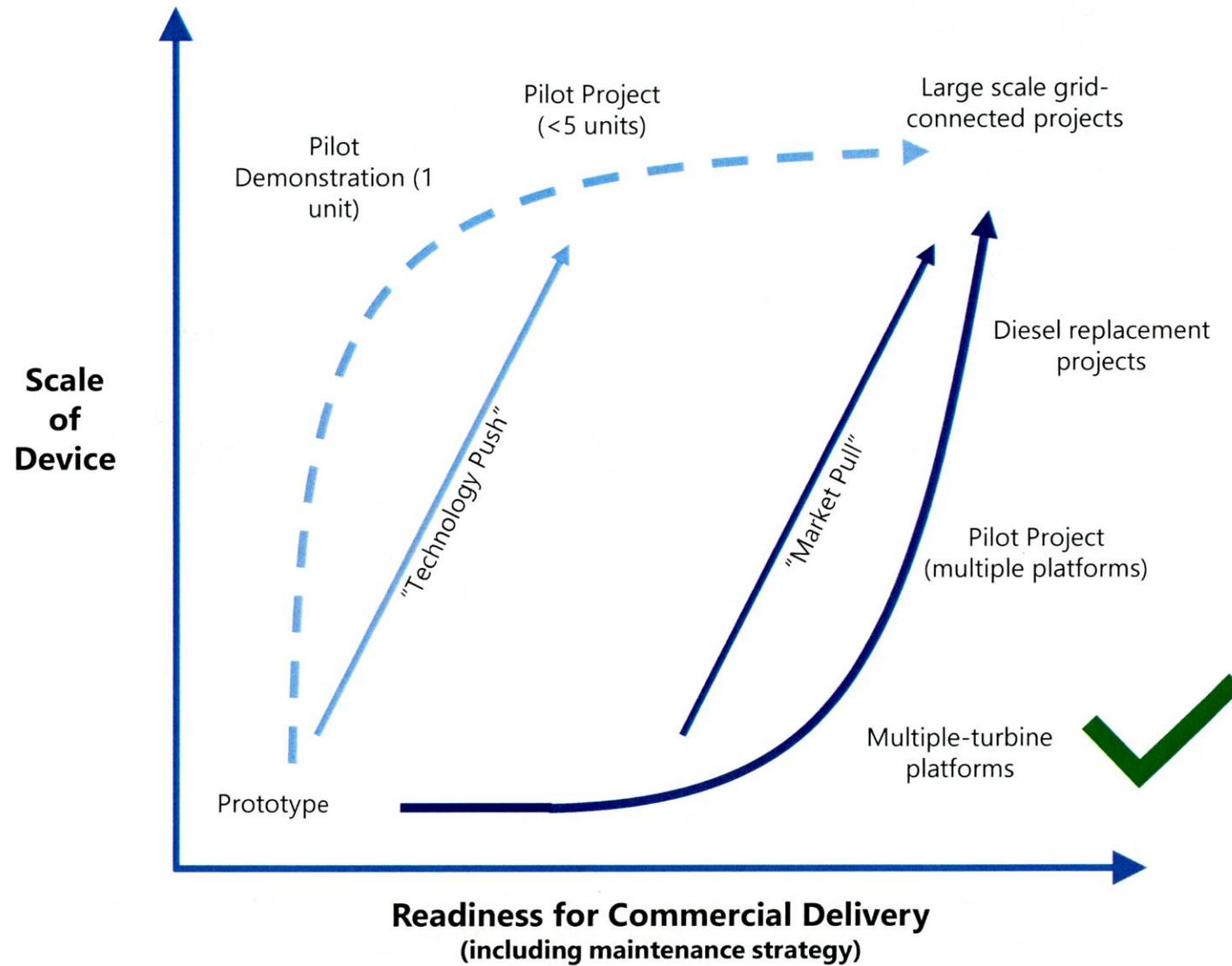
Digby

HALIFAX

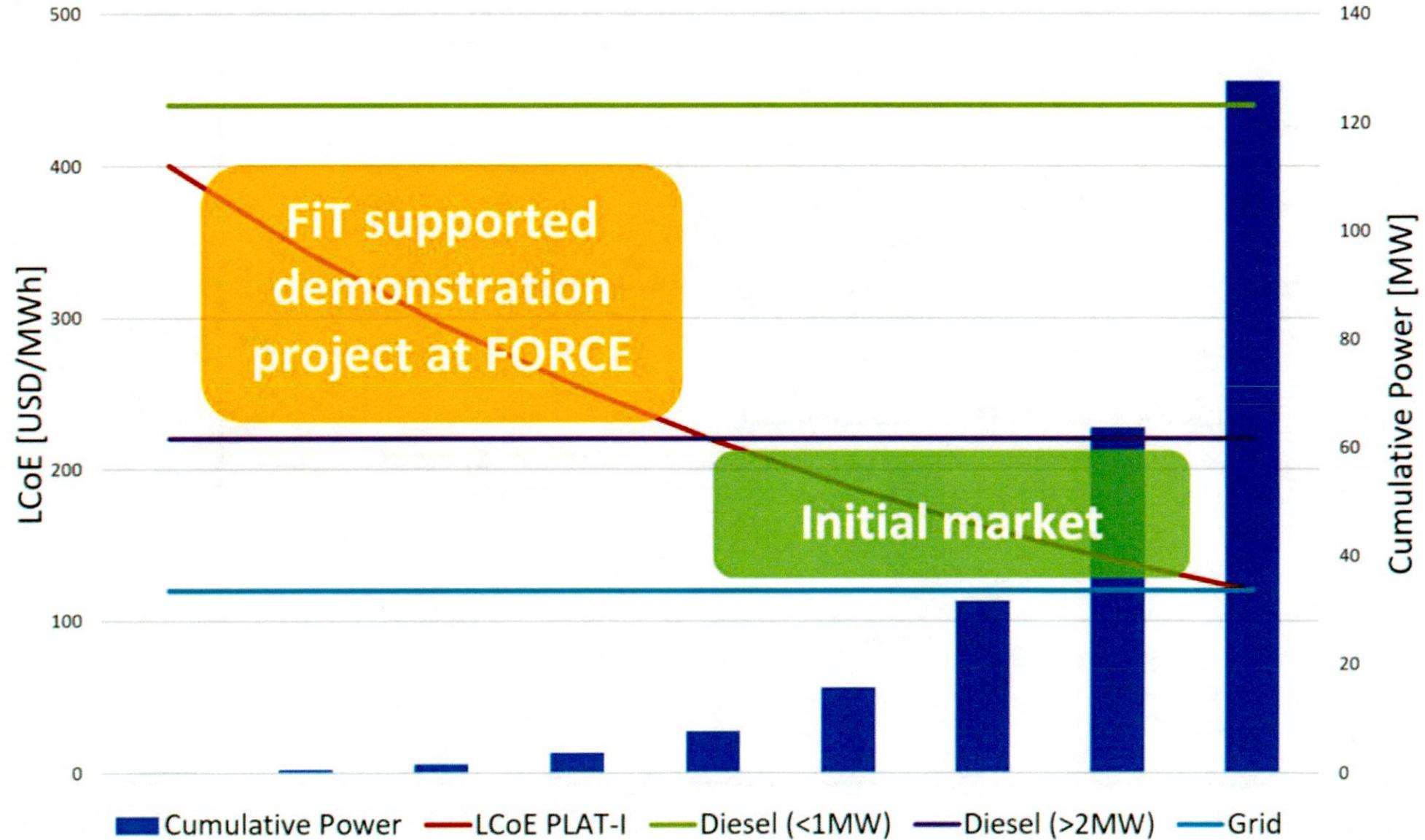
- SME Canada HQ
- Commercial centre for NS
- Logistical hub for projects



THE COMMERCIALISATION JOURNEY AHEAD



THE COMMERCIALISATION JOURNEY AHEAD



PEMPA'Q TIDAL ENERGY PROJECT

9MW demonstration project, utilising adjacent berths at the Fundy Ocean Research Center for Energy (FORCE)

- Sustainable Marine Energy (Canada) Ltd; 5MW
- Minas Tidal LP (MTLP); 4MW

Staged build-out to de-risk project and incorporate learning from each phase:

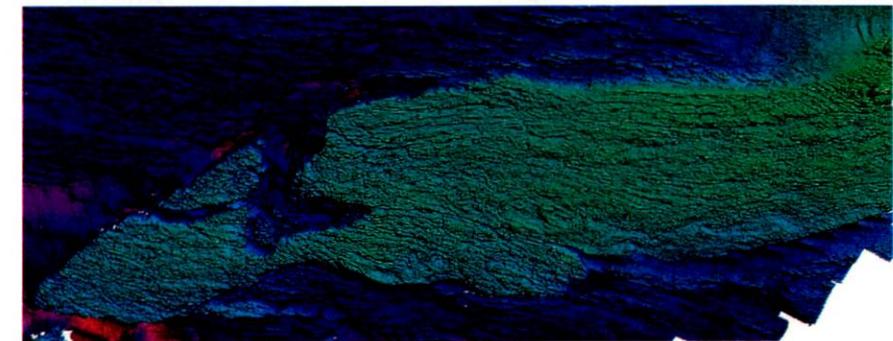
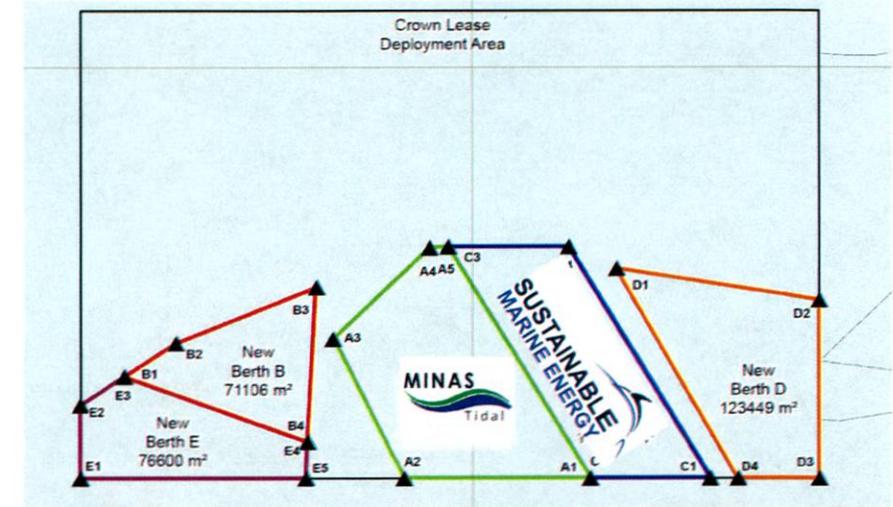
- Phase I – 1.26MW by early 2021
- Phase II – 2.52 MW by end of 2021
- Phase III – 5.04 MW by end of 2022

License for Phase I has been issued by NSDEM; current deadline for CoD is Dec 2020

Negotiating final details of a Design, Build and Operate (DBO) contract with reconcept for Phase 1; reconcept is an independent, owner-managed company and one of Germany's pioneers in investments in renewable energy assets

Certainty over revenue, and the extension of the deadlines for activation of the current PPA's is required by project financiers to pull investment (~\$100m) to deliver what will be the world's first floating tidal array, and Canada's first instream tidal energy array.

Almost all of this will be inward investment into Nova Scotia, and we only get paid if we deliver, therefore very low risk for the Province of Nova Scotia, and lots of upside.





Thank You

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INTEGRATED TIDAL ENERGY

POWERED BY
**SUSTAINABLE
MARINE ENERGY LTD**

HYDRO