Whistler Sailing Association

The Electrification of Alta Lake

Presentation Overview

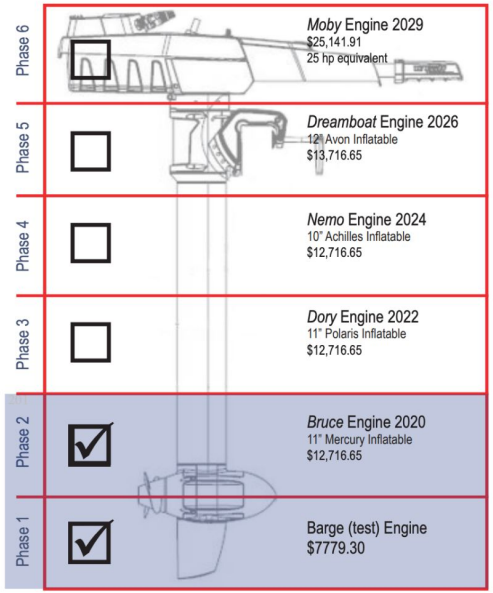
- Operation overview
- Project goals
- What have we done so far?
- What have we learned?
- What are the challenges?
- What are the next steps?

Why does Whistler Sailing need motor boats?

In 2017, Whistler Sailing began the Preserving Alta Lake Project.

(see plan at Whistlersailing.com)

Preserving Alta Lake Project - Torqeedo Electric Engine Map
Carbon Neutral Whistler Sailing Association - June 2018



Coach Boat *Moby* Electric Engine. WSA to seek environ,mental grant opportunities and host fundraising efforts to help secure funding. Private donor to match 50%.
Goal of completion: End of season 2029

Budget:
$9899.64 - Cruise 10.0 RL Electric Motor
$12111.59 - Lithium Battery Packs (2 required)
$461.44 - Gateway set - switch for motor
$1039.68 - Charger for battery
$1629.56 - Power steering cables & install
$25,141.91

Coach Boat *Dreamboat* Electric Engine. WSA to seek environmental grant opportunities and host fundraising efforts to help secure funding. Private donor to match 50%.
Goal of completion: End of season 2026

Budget:
$5203.00 - Cruise 4.0T Electric Motor
$6012.54 - Lithium Battery Pack
$461.44 - Gateway set - switch for motor
$1039.68 - Charger for battery
Approx. $1000 - Power steering cables & install
$13,716.65

Coach Boat *Nemo* Electric Engine. WSA to seek environmental grant opportunities and host fundraising efforts to help secure funding. Private donor to match 50%.
Goal of completion: End of season 2024

Budget:
$5203.00 - Cruise 4.0T Electric Motor
$6012.54 - Lithium Battery Pack
$461.44 - Gateway set - switch for motor
$1039.68 - Charger for battery
$12,716.65

Coach Boat *Dory* Electric Engine. WSA to seek environmental grant opportunities and host fundraising efforts to help secure funding. Private donor to match 50%.
Goal of completion: End of season 2022

Budget:
$5203.00 - Cruise 4.0T Electric Motor
$6012.54 - Lithium Battery Pack
$461.44 - Gateway set - switch for motor
$1039.68 - Charger for battery
$12,716.65

Coach Boat *Bruce* Electric Engine. 2020 WSA secures WB Enviro Fund of 25%, and secures a private donor to match the project up to 50%. Once the final 25% of funds are raised, this engine will replace the current gasoline engine on Coach Boat *Bruce*.
Goal of completion: End of season 2020

Budget:
$5203.00 - Cruise 4.0T Electric Motor
$6012.54 - Lithium Battery Pack
$461.44 - Gateway set - switch for motor
$1039.68 - Charger for battery
$12,716.65

2017 WSA Acquired first Torqeedo electric engine. This engine was placed on the sailing association barge as a trial engine to see if the technology would be sufficient for a coach boat. This test proved successful, and developed the carbon neutral plan - to replace every gasoline coach boat engine with an electric engine.

Budget:
$5325.38 - Cruise 4.0T Electric Motor
$2453.92 - 4 Type 31 12V Gel Batteries
$7779.30

Budget:
** Represented in CAD based on current exchange rate at time of document creation (2018)*
** Budget does not include GM installation hours*
** Budget includes taxes and duties*

Technology for electric outboard

- Electric and gasoline equivalent
- Battery weight
- Lithium ¼ weight of lead acid batteries
- Range

Phase 1 - 2017

- The first electric motor joins Whistler Sailing
- Purchased entirely by a private donor
- Torqeedo brand from Germany 48v with 4 large RV/Marine type 31 deep cycle 12V lead acid batteries
- Overall, we are pleased with the result

Phase 2 - 2019

- The second motor joins the fleet
- Funded by our own fundraising, a grant and a private donor
- Same motor with a different battery. Lithium which is much lighter
- Challenges encountered

What are some of our challenges?

- Battery and software problems
- Battery weight and size
- Waterproof installation in boats
- Lack of local dealer and servicing

But our two biggest challenges…

Cost

	WSA motorized boats	current engine	electric equivalent	batteries required	charger	required accesories	Shipping	Installation			
1	14 Ft Mercury inflatable	40hp 4 stroke engine price+ engine + parts + installation	elco 30hp	96v lithium (4 x 24v batt)		battery cables, trim tilt, battery monitor, , cables , throttle control			total	Total + tax	notes
		$8,501.25	9450	21397.5	$4,833.00	$2,258.55	$1,000.00	1500	$40,439.05	$45,493.93	**battery weight 450 lbs
2	12.5 foot Avon	15hp 4 stroke engine price+ engine + parts + installation	Torqeedo cruise 10r 20hp	power 48-5000 x 2 48 volts		throttle control					
		$5,681.41	$12,150.00	$12,538.80	$2,167.20	$1,709.99	$750.00	1200	$30,515.99	$34,330.49	
3	12 foot Mercury	9.9 hp 4 stroke	Torqeedo cruise 4.0 8hp	power 48-5000 48 volts							
		$2,701.44	$5,425.20	$6,269.40	$1,083.60		$750.00	500	$14,028.20	$15,781.73	
4	10 foot Achilles	8hp 4 stroke	Torqeedo cruise 4.0 8hp	power 48-5000 48 volts							
		$2,476.32	$5,425.20	$6,269.40	$1,083.60		$750.00	500	$14,028.20	$15,781.73	
5	11 ft Polaris inflatable	9.9hp 4 stroke	Torqeedo cruise 4.0 8hp	power 48-5000 48 volts							
		$2,701.44	$5,425.20	$6,269.40	$1,083.60		$750.00	500	$14,028.20	$15,781.73	
6	8ft Achilles	6hp 4 stroke	Torqeedo cruise 2.0 ,5hp	power 26-104 24 Volts							
		$1,788.64	$4,822.00	$3,133.80	$721.80		$750.00	500	$9,927.60	$11,168.55	
7	11 foot grey boat	2018 electric 8hp including lithium battery + charger							Grand total	$138,338.15	
		$12,210.91									
8	barge	2017 electric 8hp including 4x gel battery + charger									
		$7,779.30									
	Total cost of current engines owned by WSA	**$43,840.71**									

Larger motors cost prohibitive may need to purchase different boats to achieve goal which is not considered in this budget.

Infrastructure

- Whistler Sailing's current infrastructure is a key limiting factor at this time preventing us from transitioning the rest of the fleet to electric
- Electrical system in club cabins at capacity
- Electricity on dock and charging stations will be required (just like your electric car), batteries are attached to boats
- WSA operates on RMOW property would need to collaborate to make improvements

The next steps....

Thank you!

Questions?

whistlersailing.com