



Foresight
cleantech accelerator centre



ARCTIC
advanced resource clean
technology innovation centre

Challenge Overview

Neil Huff

Overview



- ▶ Presentation Objectives
- ▶ General Background Information
- ▶ Roles
- ▶ The COSIA Challenge
- ▶ Our Industry Partner: COSIA
- ▶ The COSIA Challenge Timelines
- ▶ Technical Requirements

▶ Foresight Cleantech Accelerator Centre - ARCTIC

Presentation Objectives



- ▶ Provide important background Information about ARCTIC and the Challenge Sprint
- ▶ Discuss opportunities and roles for Innovation Ecosystem Partners to engage in ARCTIC
- ▶ Facilitate a Q&A related to the program and this Challenge



General Background Information

About Foresight



- ▶ Started in 2013 as Western Canada's first Cleantech Accelerator currently supporting 25 companies
- ▶ A Not-for-Profit with Funding from BC Innovation Council and National Research Council IRAP Program
- ▶ Services
 - ▶ BCIC Venture Accelerator Program
 - ▶ Expert Clinics and Cleantech Connect Events
 - ▶ Office and Lab Space
 - ▶ ARCTIC Program

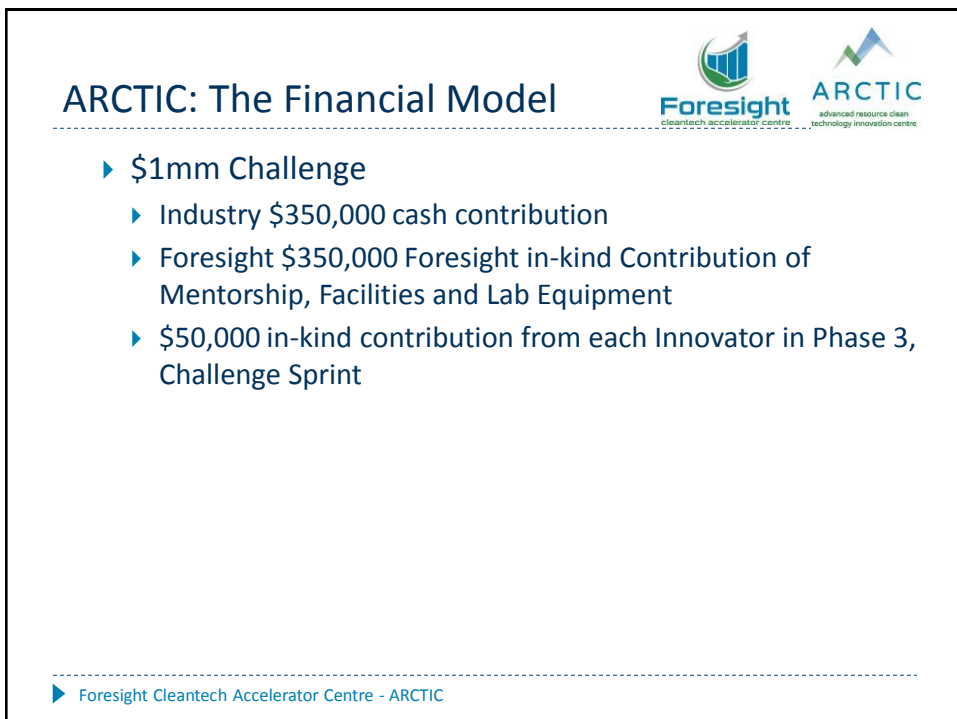
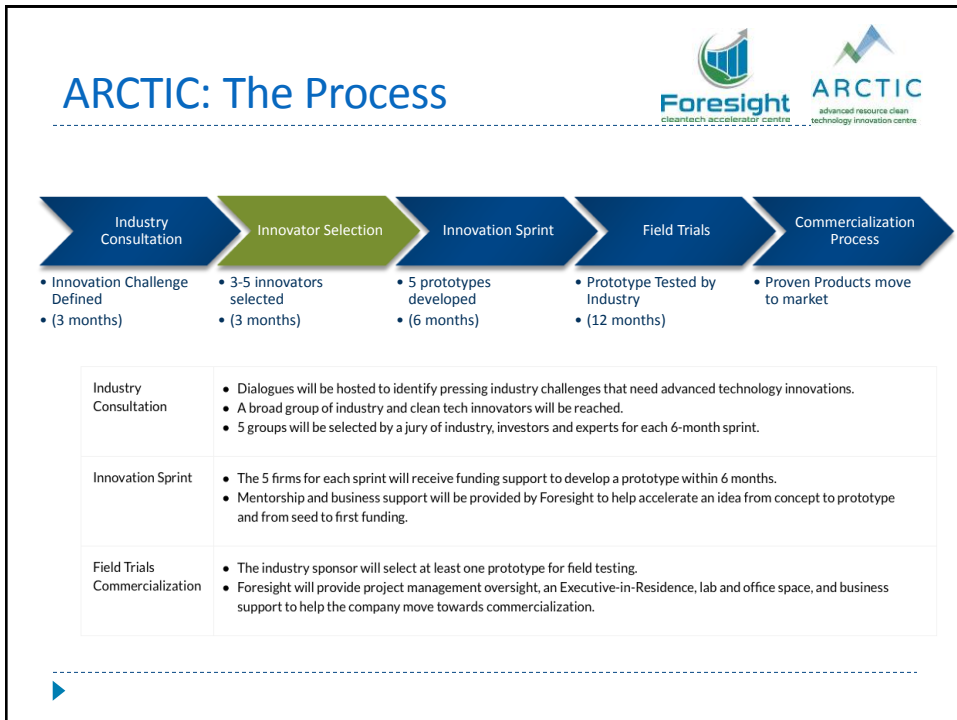


About ARCTIC



Meeting Market Needs by Linking Innovators to Real Challenges








Foresight
cleantech accelerator centre

ARCTIC
advanced resource clean
technology innovation centre

Roles

Foresight Cleantech Accelerator Centre - ARCTIC



Role : Foresight

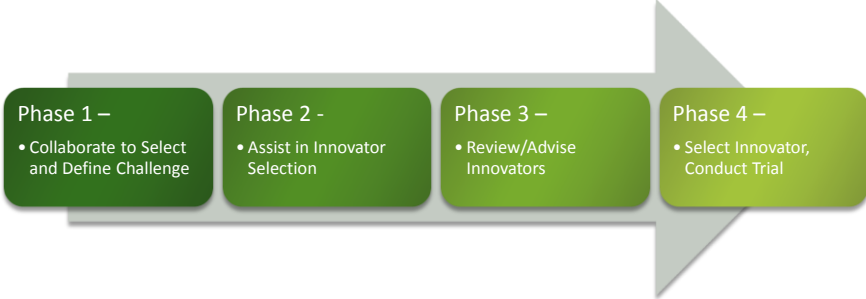



- ▶ Program Management
- ▶ Challenge Definition Support through consulting teams
- ▶ Challenge marketing and Innovation Selection Process
- ▶ Project Support through mentorship, training, lab space
- ▶ Partnership Development to improve opportunities for innovators and engage other support in the innovation system

▶ Foresight Cleantech Accelerator Centre - ARCTIC

Role : Industry Sponsor





Provide

- 35% of the project budget
- Access to expertise in Challenge Area

Receive

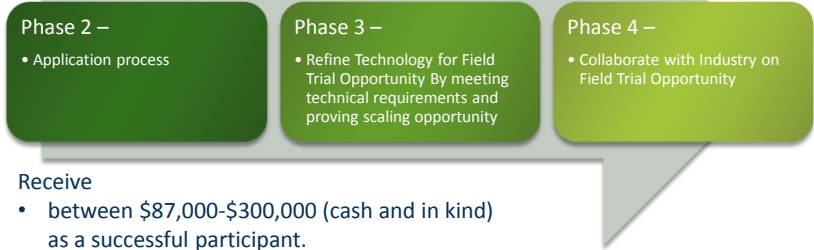
- Leveraged funding partner
- Access to novel solution providers
- Access to top-graded opportunities
- Potential supply chain collaborators

Role : Innovation Ecosystem

Share	<ul style="list-style-type: none"> • Distribute the information about the ARCTIC Challenges to your network
Refer	<ul style="list-style-type: none"> • Recommend to innovators in your network to engage in the application process
Mentor	<ul style="list-style-type: none"> • Assist companies in your markets who are participating in the program to increase opportunities for success
Leverage	<ul style="list-style-type: none"> • Identify and bring other funding or in-kind to the table for the innovator to prepare them for success • Volunteer time as an expert to top-grade innovators for your programs and for investor and industry success.

Role : Innovators



Receive

- between \$87,000-\$300,000 (cash and in kind) as a successful participant.
- Access to real market opportunities and expertise to reduce risk
- Leverage current funding and attract new sources of funding

Provide In kind contributions of:

- \$50,000 in Phase 3
- \$100,000 in Phase 4 if selected



Foresight
cleantech accelerator centre



ARCTIC
advanced resource clean
technology innovation centre

The COSIA Challenge

About COSIA



- ▶ Created in 2012, COSIA assembles 90% of oil sands producers into an alliance for enhancing environmental performance
- ▶ 13 Producers, 37 Associate Members (Government, Academic, Innovation Hubs, Companies)
- ▶ Learn more at cosia.ca

▶ Foresight Cleantech Accelerator Centre - ARCTIC

The COSIA Challenge



High Grade Heat

COSIA is seeking technologies that reduce GHG emissions by capturing approximately 200°C waste heat from flue gas and transforming it into higher value uses.

In particular, COSIA is searching for higher value uses in the following areas:

- ▶ Preheating combustion air
- ▶ Preheating makeup water
- ▶ Space heating
- ▶ Electricity production
- ▶ Water treatment

Low Grade Heat

COSIA is seeking technologies that reduce GHG emissions by capturing 60°C to 80°C waste heat from the glycol loop and transforming it into higher value uses.

In particular, COSIA is searching for higher value uses in the following areas:

- ▶ Preheating combustion air
- ▶ Preheating makeup water
- ▶ Space heating
- ▶ Electricity production
- ▶ Water treatment

▶

The COSIA Challenge (Cont'd)



Size of the Opportunity

- ▶ 55 thermal in situ sites with 33 more by 2024
- ▶ Production per Facility (barrels/day)
 - ▶ <10,000 Min
 - ▶ 118,000 Max
 - ▶ 35,000 Average
- ▶ Additional Markets
 - ▶ Generation
 - ▶ Refineries
 - ▶ Forest Products

Program Assistance

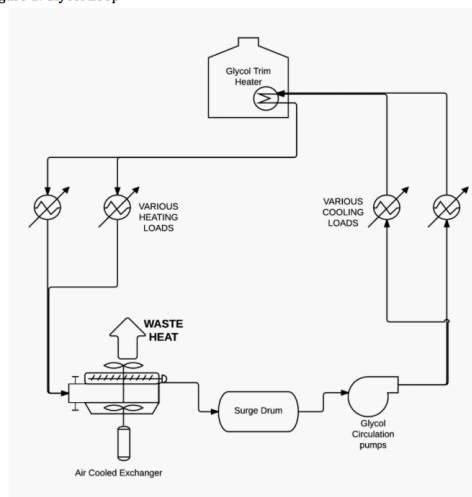
- ▶ For Innovators
- ▶ Phase 3 Challenge Sprint
 - ▶ 3-5 participants
 - ▶ \$87-305,000 depending on #s
 - ▶ \$50,000 in kind from innovator
- ▶ Phase 4 Field Trial
 - ▶ 1 participant
 - ▶ \$150,000
 - ▶ \$100,000 in kind from innovator

▶ Foresight Cleantech Accelerator Centre - ARCTIC

Technical Requirements



Figure 1: Glycol Loop



▶ Foresight Cleantech Accelerator Centre - ARCTIC

Technical Requirements



Parameter	Value	Unit
Flow per one OTSG	114,000	kg/h
Inlet Temperature	182	°C
Inlet Pressure	0.0 to +0.4	kPag
Composition:		
N₂	71.613	mole %
Ar	0.871	mole %
O₂	2.595	mole %
CO₂	8.616	mole %
H₂O	16.298	mole %
SO₂	24	ppmv
SO₃	<2	ppmv
NO	57	ppmv wet basis as NO ₂
NO₂	3	ppmv wet basis
Particulates	<10	mg/Nm ³



Our Phase 2 Challenge Timelines



Action	By Whom	Dates
Innovation partners (e.g. SDTC etc) program briefing webinar	ARCTIC	November 2, 2015
Potential applicants/innovators program briefing webinar	ARCTIC	November 9, 2015
Proposal Submitted	Proponents	November 28, 2015
Shortlisted proponents contacted for presentations	ARCTIC Review Team	December 11, 2015
Final Sprint Decisions and Start Sprint (prototype or test, or equivalent)	Proponents and ARCTIC/COSIA	January 2016
Wrap up Sprint, choose Field trial winner	Proponents and ARCTIC/COSIA	July- September 2016

Application Details at arctic.foresight.com





Foresight
cleantech accelerator centre



ARCTIC
advanced resource clean
technology innovation centre

Discussion

Foresight Cleantech Accelerator Centre - ARCTIC

For More Information



Program & General Questions

Online arctic.foresightcac.com
Email Arctic.info@foresightcac.com
Phone (604) 245-0042 x101

Technical Questions

Adam Goehner – The Delphi Group

Email agoehner@delphi.ca
Phone (587) 880-3373 ext. 23

► Foresight Cleantech Accelerator Centre - ARCTIC



Foresight
cleantech accelerator centre



ARCTIC
advanced resource clean
technology innovation centre

November 28, 2015

COSIA Challenge Application Deadline

Foresight Cleantech Accelerator Centre - ARCTIC