

Message

From: Lepire, Wayne A [/O=EXXONMOBIL/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENT: [REDACTED]]
Sent: 2/3/2018 6:14:39 PM
To: Swarup, Vijay [REDACTED]@exxonmobil.com]; Trelenberg, Pete W [REDACTED]@exxonmobil.com]
CC: Connolly, Duncan C [REDACTED]@exxonmobil.com]; Hart, Christopher G [REDACTED]@exxonmobil.com]
Subject: RE: Highlander Third Party Study Proposal

Vijay,

Thanks for feedback.

I support further study definition and hope we can complete this step in the coming days so we can commence the work and fold it into our broader Highlander SITA results over the next 4-6.

Duncan is leading this segment of our SITA work, so by cc, I'll ask him to work with you or your designee(s) to further define the study scope(s).

On another note, I'm headed to DC Tuesday for meetings starting Wednesday with DOE officials as prep for Sec Perry's trade mission to India late this month.

Regards,

Wayne

Wayne A. Lepire
Executive Director, Global Gas Strategy
ExxonMobil Gas & Power Marketing Company
[REDACTED]

EMHC/E2.6B.484
Spring, Texas 77386
Telephone: [REDACTED]
Mobile: [REDACTED]

From: Swarup, Vijay
Sent: Saturday, February 3, 2018 10:06 AM
To: Lepire, Wayne A [REDACTED]@exxonmobil.com>; Trelenberg, Pete W [REDACTED]@exxonmobil.com>
Cc: Connolly, Duncan C [REDACTED]@exxonmobil.com>
Subject: RE: Highlander Third Party Study Proposal

Wayne: I've been out this week on a family matter – just now catching up with notes. I think we need to define objectives and deliverables in a bit more detail (you may have already done that). There are at least two key components to the study (time horizon and technology assumptions). I don't think we can use today's furnaces, grid, etc. as the basis – we have to apply some judgement to the likely options in the next 25 years (post 2040).

The country NDCs can be used as a near term basis, but the reality is not much can happen in the next 5-10 years. New technologies are already emerging in terms of furnace design and grid management – add to that the potential for high voltage DC lines in China and India, and the future integrated power solution becomes complex with many variables.

So, better definition on the objectives (as always, the better we define the problem, the more likely we find a solution set) will help define how we can best staff this and get to the desired product.

Let's talk this week if possible.

Thanks

Regards,

Vijay Swarup

[Redacted] (p)
[Redacted] (f)

From: Lepire, Wayne A

Sent: Friday, February 02, 2018 11:03 AM

To: Trelenberg, Pete W [Redacted]@exxonmobil.com>; Swarup, Vijay [Redacted]@exxonmobil.com>

Cc: Connolly, Duncan C [Redacted]@exxonmobil.com>

Subject: Highlander Third Party Study Proposal

Pete, Vijay,

First, many thanks again for your and your teams' engagement and collaboration with the Highlander team.

Second, as you may recall, our team is currently working on several pieces of analytical (situational analysis) work, summarized in the table below. Most of these items are being coordinated by Highlander resources, leveraging input and expertise from CSR, CSP and other EM functions.

Given organizational timing and capacity constraints, there are two key pieces of analytical work that we believe are good candidates for third party support. Following are the details:

- 1.) Gas + RE value generation / compatibility
 - a. *Objective:* Identify strategically-aligned and actionable case studies for gas industry investment
 - b. *Options evaluated:* Highlander reviewed three proposals, and recommend the FTI-led team as the best balance of capability and cost
 - c. *Deliverables:* Validate value of gas pairing with renewables and identification of key country opportunities.
- 2.) Monetize mortality from coal combustion
 - a. *Objective:* Reputable / credible academic study to monetize impacts of coal combustion
 - b. *Options evaluated:* Highlander supports Dennis Devlin's (CSP) recommendation to use HEI as most efficient/effective path forward
 - c. *Deliverables:* Manuscript for peer-reviewed publication enabling EM / industry advocacy use

With your alignment, we plan to submit this proposal to G&PM senior management this week. Please let us know if you have any comments, additions or concerns.

Thank you and we look forward to your response.

Regards,

Wayne

Work scope		Who ?	Cost (\$K USD)
Coal	High Efficiency Low Emissions (HELE)	EM (HL)	0

CCS	Carbon Capture and Sequestration	EM (HL, URC, CSR)	0
Gas + Renewables	Gas + RE strategic landscape	EM (HL, CSR)	0
	Gas + RE value generation / compatibility	EM (HL); Consultants (FTI + Implement + Stiesdal)	150 + 50
Economic Modeling	Build / test	EM (HL, CSR)	0
	Including externalities	EM (HL, CSR)	0
	Existing methodologies / limitations	EM (HL)	0
Externalities	LCA	EM (HL, CSR)	0
	Existing methodologies / limitations	EM (HL)	0
	Monetize mortality from coal combustion	EM (HL, CSP), Consultants (HEI / Columbia U)	50
Economic Multipliers	Coal, gas and RE value chain (VC)	EM (HL)	0
	Key insights from comparative VC	EM (HL)	0
	Identify economic multipliers	EM (HL)	0
	VC case studies	Consultants (TBD)	TBD
	Prioritize end-uses for coal-to-gas switching	EM (HL)	0

Wayne A. Lepire
 Executive Director, Global Gas Strategy
 ExxonMobil Gas & Power Marketing Company

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 Telephone: [REDACTED]
 Mobile: [REDACTED]