10 ASSESSMENT QUESTIONS

(AUTOMOTIVE ZERO-EMISSION MANFACTURING

CHALLENGE: PROJECTS $500K - $8M)

How to complete and submit this form

Please check the

p

roject requirements guide before completing this form

;

it will provide

valuable information and tips on how to answer each section.

This document has an open text architecture to support the easy population of text and the

addition of pictures, graphs and tables.

There is a word limit of

9

00 words per question. Graphs,

charts,

and pictures (such as project

plans, market projections) that do not have heavy word content are acceptable within the

document and do not count towards the word limit.

Tables will count towards the word limit

exce

pt for

the Risk Register.

Assessors will only use the information contained within this application to base their

assessment.

Hyperlinks and links to websites are not permitted as this could provide additional information,

which would provide a biased am

ount of information for some projects over others.

Please note that this form can be used for

the Automotive Zero

-

Emission Manufacturing

Challenge

application.

Please do not email this document to NGen.

Once complete, the form

should be uploaded to

the

Hockeystick

portal under the upload documents section

;

please provide this in a

.pdf

.doc or

.docx format.

*To check wor*

*d*

*count per question,*

*highlight text, click Review (top menu) & Word Count.*

ASSESSMENT QUESTION 1

What is the

opportunity the project addresses?

*RESPONSE GUIDANCE*

·

*Outline the big*

*-*

*picture motivation and the overall advanced manufacturing objectives that the project intends*

*to achieve.*

·

*Outline the opportunities in the EV supply chain that your project*

*addresses.*

·

*Provide an overview of the project considering both technology and business impacts, highlight other strategic*

*benefits.*

·

*Outline what the project team needs to do to successfully achieve the project objectives within the desired*

*timeframe and b*

*udget. What are the specific challenges, research questions, or technical complexities that need*

*to be addressed within the timeframe of the project?*

·

*Describe the nature of the challenges facing you and your potential customers, along with the potential m*

*arket*

*challenges and barriers to entry that the project addresses.*

·

*How will the outcomes of the project overcome these challenges?*

•

*Clearly describe the project partners and how the partners will collaborate towards achieving the overall*

*opportunity the pro*

*ject addresses.*

ASSESSMENT QUESTION 2

What is the overall project and risk management plan?

A project plan and Risk Register should be uploaded separately onto the HockeyStick portal under

the project

documents

session

.

*RESPONSE GUIDANCE*

·

*Describe the Project and Risk Management approach, identifying key project management tools and*

*mechanisms (e.g., Quality Management Systems) that will be implemented to provide confidence that sufficient*

*control will be in place to minimize project risks.*

·

*Describe how you are going to measure the success of the project.*

·

*Provide a summary of the overall project plan, including work*

*-*

*package descriptions.*

·

*Describe the key milestones and deliverables either in the written part of Question 2 or add a table to*

*Appendix*

*1 that explains each key milestone.*

·

*Provide a detailed project plan consisting of a Gantt chart (Appendix 1) that details the Work Packages, tasks,*

*timelines, milestones, deliverables, dependencies and resource allocation for all partners.*

·

*Desc*

*ribe the resource and management requirements for successful project completion, including how the work*

*will be shared among project partners.*

·

*Provide a comprehensive risk analysis, including a Risk Register (Appendix 2) identifying the key risks within th*

*e*

*project.*

·

*Consider at least the:*

·

*technical,*

·

*commercial,*

·

*managerial*

·

*financial risks*

·

*intellectual property*

·

*Other risks to consider (and are not limited to) include:*

*Resource, Freedom to Operate, Safety, Regulatory,*

*Legal, and Environmental risks.*

·

*Provide appropriate analyses of the likelihood and impact of each of the risks along with appropriate mitigation*

*strategies.*

·

*Assessors will be looking to see that all*

*the main risks are identified and that there are sufficient risks within the*

*project to warrant NGen funding and that these risks are appropriately controlled.*

ASSESSMENT QUESTION 3

What is transformative about the project**?**

*RESPONSE GUIDANCE*

·

*Clearly define the transformative Advanced Manufacturing aspects of the project and what new knowledge of*

*advanced manufacturing is being created by each partner organization.*

*•*

*Outline the current state*

*-*

*of*

*-*

*art manufacturing processes and technologies for*

*your industry (or sector) and*

*describe how this project pushes the boundaries in the context of Advanced Manufacturing.*

·

*Identify the extent to which the project is transformative and innovative both technically and commercially.*

*Explain how the project h*

*as the potential to transform or support the transformation of each partner*

*organization. Provide evidence for these statements.*

*•*

*This could include the results of:*

*­*

*patent searches,*

*­*

*competitor analyses,*

*­*

*literature surveys.*

*If*

*applicable, you should also outline your background intellectual property rights, as related to the project.*

*•*

*The transformative impact of each project will be assessed on the following considerations:*

*­*

*Will the project lead to technological and busine*

*ss advantages that will allow Canadian companies to*

*leapfrog global competitors and become world leaders in the application and production of advanced*

*manufacturing technologies?*

*­*

*Will the project provide an enabling platform for further technology devel*

*opment, application, and scale*

*-*

*up in Canadian manufacturing?*

*­*

*Will the project be recognized globally as conferring or strengthening Canadian leadership in advanced*

*manufacturing?*

*• If appropriate, describe any novel research that will be*

*undertaken as part of the project. Highlight and explain*

*the*

*timeliness and novelty of these research aspects of the project in an industrial context.*

*• Are the technologies new, or are you looking to apply existing technologies to develop unique trans*

*formative*

*manufacturing solutions?*

*• What is the plan and rationale for the protection of IP and sharing of IP among your consortium partners and,*

*beyond this, with other NGen members? (IP Strategy Appendix 4)*

*Elements of product development are eligib*

*le for funding under this challenge, and the novel transformative*

*aspects of the product or technology can be described in response to this question. These other novel aspects are*

*important to provide context. It is essential to note that the assessors wi*

*ll be awarding marks based on what is*

*transformative for advanced manufacturing.*

ASSESSMENT QUESTION 4

What is the nature and size of the potential market the project will address?

*RESPONSE GUIDANCE*

·

*Describe*

*the*

*market(s)*

*that*

*you*

*are*

*entering*

*with*

*the*

*development*

*of*

*a*

*new*

*advanced*

*manufacturing*

*technology*

*OR*

*describe*

*the*

*existing*

*market*

*that*

*you*

*are*

*operating*

*within*

*and*

*how*

*this*

*advanced*

*manufacturing*

*opportunity*

*will*

*enhance*

*your*

*competitive*

*position*

*within*

*the*

*market*

·

*Consider*

*including*

*details*

*of:*

­

*the target market, including the size, margins, market leaders, key competitors, price competition, barriers*

*to entry*

­

*Adjacent markets where the new knowledge could be commercialized*

­

*dynamics of the market quantifying its*

*current size, including historical and projected growth rates*

­

*the specific target product, platform and service applications underpinning the market*

­

*the expected share of market to be captured as a result of this project*

­

*the opportunity timeline and when y*

*ou expect benefits to be realized*

­

*the impact of the project on existing or future customer relationships*

·

*Provide evidence for your statements about the market opportunities your project opens*

*-*

*up and outline your*

*strategy for developing market share.*

ASSESSMENT QUESTION 5

What sort of economic benefits is the project expected to deliver to those inside and outside

the consortium, and over what timescale?

*RESPONSE GUIDANCE*

·

*Identify the economic benefits the project will have for participating project partners and other*

*suppliers/partners both inside and outside of the project. Consider the impact over the short (1*

*-*

*3 years),*

*medium (4*

*-*

*7 years), and long*

*-*

*term (8*

*-*

*10year).*

·

*For*

*each of the project partners (and appropriate suppliers), provide an analysis of:*

­

*the expected additional revenue that can be generated.*

­

*the number of direct jobs created and safeguarded.*

­

*the number of indirect jobs that can be created within the Suppl*

*y chain*

*–*

*consider referencing multiplier*

*effects based on direct jobs.*

­

*expected exports*

­

*the economic impact of new market opportunities or new expanded value chain opportunities*

·

*Quantify any indirect economic benefits that might be achieved.*

*Examples might include the potential cost*

*savings associated with:*

­

*reduced downtime*

­

*a reduced manufacturing footprint*

­

*positive environmental benefits*

­

*reduced material usage*

­

*higher quality output*

­

*reduced scrap and warranty.*

·

*Outline the economic benefits for each partner and over what timescale.*

·

*How does the partnership help each individual partner to achieve greater economic growth?*

·

*Define the economic benefits that the project can have on the whole Canadian Supply Network u*

*pstream and*

*downstream.*

·

*Will the project enable a more localized supply of material or components? What are the spill*

*-*

*over economic*

*benefits that this might achieve?*

·

*Will the project create spin*

*-*

*off business opportunities (new businesses, new or expanded s*

*upplier or partner*

*relationships) in Canada?*

ASSESSMENT QUESTION 6

What is the impact on the broader advanced manufacturing ecosystem?

*RESPONSE GUIDANCE*

·

*Broader Ecosystem*

*-*

*Leaving a legacy in Advanced Manufacturing.*

·

*Projects must demonstrate a significant and lasting impact on the development and capacity of Canada’s*

*Advanced Manufacturing ecosystem.*

·

*Describe how the project will create a widespread positive impact, leaving a legacy for Advanced Manufacturing*

*in Can*

*ada for the partners and*

*beyond*

*(considering how the project impacts beyond the partners and*

*throughout the supply network).*

·

*To highlight this, consider some of the following:*

·

*Workforce Development:*

·

*How will the project encourage the*

*engagement of women and underrepresented groups in the*

*workforce?*

·

*Outline the opportunities for attracting, training, and developing a*

*highly*

*skilled talent pool (both*

*existing and new staff).*

·

*Industry knowledge:*

·

*Will the project serve as a model or learn*

*ing platform in Advanced Manufacturing for others? For example,*

*providing tours or use cases on best practices.*

·

*Will the project generate any intellectual property that others can use to accelerate technology*

*applications or scale*

*-*

*up manufacturing in Cana*

*da?*

·

*Will the project influence the activities of colleges, universities, or research institutes to support advanced*

*manufacturing education, resulting in the diffusion of this knowledge back into the industry?*

·

*Infrastructure support:*

·

*Will the*

*project help to develop or support the use of tools, testbeds, or data platforms that will foster*

*future technology development, adoption, scale*

*-*

*up, and commercialization activity in Canadian*

*manufacturing?*

·

*Collaborative Networks:*

·

*Will the project further*

*enhance the ability of industry partners, post*

*-*

*secondary education institutions,*

*research centres, and other private and public organizations to work together to strengthen advanced*

*manufacturing in Canada?*

·

*Describe how the project could build greater capa*

*city / provide opportunities and capabilities supporting*

*Small and Medium Enterprises.*

ASSESSMENT QUESTION 7

How does NGen add value and what additional benefits will be achieved?

*RESPONSE GUIDANCE*

*This question is split into 2 parts. Both*

*parts much be fully addressed in the application.*

·

*Part 1*

o

*Clearly describe and provide evidence that NGen support is essential to achieve the project goals; this is a*

*critical requirement in the program.*

o

*Questions to consider:*

§

*How has the project’s technical or commercial scope changed due to NGen support?*

§

*Why is NGen funding critical to undertake the project as proposed?*

§

*Does NGen funding allow the project to be undertaken differently (more quickly, at a larger scale, with*

*mo*

*re partners)?*

§

*Would the collaborative partnerships*

*have been*

*formed without the project?*

§

*Is the project too risky for commercial investors?*

·

*Part 2*

o

*Describe the Social and Environmental benefits that this project enables for each partner.*

o

*Social Benefits*

*-*

*Describe any expected social impacts, for example:*

§

*Diversity and inclusion, including activities that will be undertaken to ensure that women and*

*underrepresented groups are meaningfully represented in, and benefit from, the project*

§

*Enhanced quality of l*

*ife*

§

*Social inclusion/exclusion*

§

*Public empowerment*

§

*Health and safety*

o

*Environmental Benefits*

*-*

*Outline the environmental improvements and impacts as an outcome of this*

*project?*

*Examples that can be considered:*

§

*GHG, Particulate matter reduction*

§

*Process and Resource Efficiency*

§

*Better Energy Management*

§

*Reduced Volatile Organic Compounds*

§

*Reduced land degradation*

§

*Reduced water usage*

§

*Footprint Reduction*

§

*Reduced emissions due to more efficient and optimized transportation and distribution within the*

*s*

*upply chain*

§

*Use or Creation of Sustainable Materials*

§

*Reuse, Recycle, and Remanufacturing*

§

*Other Life cycle benefits*

§

*Other sustainability opportunities*

ASSESSMENT QUESTION 8

How will the results of the project be commercialized?

*RESPONSE GUIDANCE*

·

*The response should highlight the new potential business opportunities for each partner in collaboration and*

*individually.*

·

*Describe the activities that will be undertaken to ensure the sustainability and continued growth of the project*

*outcomes beyond th*

*e project end date.*

·

*Outline the commercial spill*

*-*

*over opportunities, demonstrating how your activities will contribute to the wider*

*industry and other sectors.*

·

*For each partner describe the activities that will be undertaken to ensure the sustainability a*

*nd continued*

*growth of the project outcomes beyond the project end date, including:*

o

*expected project outputs that will be commercialized*

*-*

*including new or improved products, services,*

*processes, capabilities, and manufacturing technologies.*

o

*the route to m*

*arket:*

§

*the position within the value chain,*

§

*the organizations necessary to access the road vehicle market,*

§

*the commercialization channels that will be exploited to gain customer traction,*

§

*identify specific channels being targeted and the timeframe. Iden*

*tify the Vehicle Manufacturers or tier*

*1’s that would be involved as a commercialization route. Provide letters of support*

*demonstrating a*

*relationship and an in*

*-*

*principle agreement to commercialize the outcomes should the project be*

*successful*

*–*

*upload t*

*o appendix 4 in the project documents section of the Hockeystick portal.*

o

*measures for protection, exploitation and dissemination of project outcomes*

o

*other market opportunities (considering adjacent markets) that will emerge as a result of this project*

o

*opportunities to commercialize the Intellectual Property, include a license to manufacture, licensing of IP,*

*manufacturing or direct sales (IP Strategy A*

*ppendix 3)*

o

*the plan and rationale for the protection of IP and sharing of IP among your consortium partners and,*

*beyond this, with other NGen members. Including a patent filing strategy for domestic and foreign*

*jurisdictions, changes to business models or*

*processes, research, and development (R&D), manufacturing*

*services (IP Strategy Appendix 3)*

ASSESSMENT QUESTION 9

Describe the collaboration and the partner skills, experience, resources, and access to

facilities to deliver the identified

benefits?

*RESPONSE GUIDANCE*

·

*Describe the collaborative nature of the project and how the consortium working together will achieve more*

*than if they were working individually.*

·

*Describe how the project partners will:*

­

*develop relationships and build*

*trust*

­

*increase knowledge sharing*

·

*Describe any additional collaborative activities related to suppliers, sub*

*-*

*contractors, academic or research*

*organizations involved in the project.*

·

*Consider using the IP Strategy (Appendix 3) to demonstrate the nature of th*

*e collaboration in terms of the*

*licensing and access to background and foreground IP during and after the project.*

·

*Describe the track record of the project team members in undertaking and exploiting the results of research and*

*development projects to show*

*your capability to develop and commercialize the technology.*

·

*Consider whether:*

­

*the project team has the right available mix of skills and experience to deliver the project successfully.*

*Provide a high*

*-*

*level description of the partner’s track record in a*

*chieving similar manufacturing R&D*

*projects.*

­

*appropriate governance structures between the consortium partners are in place to manage and deliver*

*the project, consider providing a high*

*-*

*level diagram*

­

*the make*

*-*

*up of the consortium, along with their knowledg*

*e and experience, will help improve the*

*capabilities of the Canadian supply chain during the project and beyond*

­

*there is appropriate access to facilities and resources, including identifying and allocating appropriate*

*space and infrastructure for the proje*

*ct to be successful (consider floor space, specialized equipment needs,*

*specialized resources, etc.)*

ASSESSMENT QUESTION 10

What is the financial commitment required for the project?

*RESPONSE GUIDANCE*

·

*Indicate the anticipated project cost, making clear the level of contribution from any project participants and*

*the level of funding required from NGen. This information should be provided in the financial workbooks.*

·

*Supporting information and explanation*

*for project costs should be provided in this section.*

*For each partner*

*explain how the funding will be used and why it is required for each of the main cost categories in the finance*

*workbook:*

§

*Labor,*

§

*Subcontract*

*,*

§

*Equipment,*

§

*Materials,*

§

*Travel,*

§

*Other eligible costs.*

·

*Ensure that all key points relating to the finances are described. For example:*

­

*Labor:*

§

*Reason for the use of specialized labor or labor with high rates.*

­

*Subcontractor*

§

*the reason for, and use of,*

*subcontractors, their impact on the project, and why they are not formal*

*project partners.*

­

*Equipment*

§

*This challenge has increased limits for capital equipment and subcontract compared to NGen’s regular*

*funding initiatives. It is essential that:*

·

*the equi*

*pment being purchased is directly linked to the project goals,*

·

*is linked to the R&D capabilities supporting the creation of a new advanced manufacturing capability.*

*This can include pilot production where the project team proves out the advanced manufac*

*turing*

*capability. It cannot subsidize full production.*

·

*is creating a new capability that does not already exist within the organization.*

·

*it is not the purchase of multiple similar pieces of equipment that would be seen as subsidizing future*

*production*

*activities*

§

*Considering the points above, please describe the capital required in detail with a justification of why it is*

*necessary to achieve the advanced manufacturing goals of the project.*

§

*A justification for any pieces of capital equipment exceeding $1M (NB: the*

*se costs require Ministerial*

*approval).*

­

*Material*

§

*the reason for large amounts of material or the use of expensive materials. Projects are not intended*

*to subsidize production; the amount of material listed should be for the purposes of the project’s R&D*

*aspects. It should be linked to the prove out of the advanced manufacturing capability, where there is*

*high material usage due to experimental/pilot production runs this should be explained.*

·

*Please provide a breakdown of the costs per work package, show*

*ing how it aligns with the project plan.*

