GDC PEA Overview

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GDC Pre-Proposal Conference
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Introduction

• Overview of the GDC process, schedule

• GDC as a community mission
  – Diverse and inclusive community
  – Science team composition
  – Data and code rights

• Scope of the solicitation
  – Project baseline and threshold implementation
  – Science Investigation
  – Instrument

• Selection Process
  – Accommodation Study
GDC PEA Process

- One-step solicitation
  - Mandatory NOI (23 Jun 2021)
  - Proposals and files submission via NSPIRES and Box (1 Sep. 2021) [PEA Sec. 6.2.2]

- Proposal Information Package (PIP) contains explicit requirements [Req. P-1]
  - For apparent conflict between PEA and PIP, PEA takes precedence

- Investigations must deliver 6 flight units, encumber reserves for 2 additional flight units [PEA Sec. 1.1, 2.3.1, 5.6; Req. P-19, P-21]
GDC PEA Process

- Proposals are *not* responsible for providing:
  - Education Program Plan [PEA Sec. 5.4.1]
  - Communications and Outreach Program Plan [PEA Sec. 5.4.1]
  - Science Enhancement Option [PEA Sec. 5.2.5]
  - Student Collaboration [PEA Sec. 5.4.2]
    - To be determined after selection, funded outside of investigations' PIMMC

- Proposals are *not* incentivized to provide:
  - Technology Demonstration Opportunity [PEA Sec. 5.3.5]
    - Must be included in and be separable from PIMMC
GDC PEA Process

• Investigations are not allowed to use the “Project Scientist” role on their proposals
  – Instrument Scientist, Deputy PI, task-specific Co-Is are available

• Restrictions on participation in the GDC PEA [PEA Sec. 4.2]
  – Non-U.S. organizations may not propose, but may contribute to U.S. organizations’ proposals with restrictions [PEA Sec. 5.5.4]
  – GDC IDS team PI and Co-Is may not participate in proposals [PEA Sec. 4.2.2]
GDC PEA Process

• PEA-specific modifications to the evaluation criteria
  – See Science Review and TMC Review for information

• Potential Major Weaknesses may use a new process
  – EVM-3 AO using new clarification process, GDC PEA may implement
  – TMC Review for information, Evaluation Plan for final process

• Organizational Conflict of Interest Avoidance and Mitigation Plan [Req. P-2]
  – New requirement, more information in the Evaluation Plan
GDC PEA Process

• Cost cap is applied to all GDC investigations, no per-investigation limit [PEA Sec. 5.5.1]
  – $132M for Phases A-D, $60M for Phases E-F (FY21$)

• Selections: Two types identified in the PEA
  – Investigations to join GDC project, deliver flight units
  – Neutral wind instrument(s) for non-GDC technical maturation (potential)
GDC PEA Solicitation, Evaluation and Selection Flow

Draft GDC PEA Released → Draft GDC PEA Community Comments Due → GDC PEA Released → GDC Preproposals Teleconference/Webex → Notices of Intent Due → Proposals Due

- You Are Here!!!
  - June 23, 2021

AO Steering Committee Meeting 1 → Compliance Check Of Proposals → TMC Evaluation

- Clarifications

Science Merit & Feasibility Evaluation → Science Meeting

- Clarifications

Debriefings to Proposers → Selection

AO Steering Committee Meeting 2 → Categorization Committee Meeting

Investigation Formulation and Implementation
## GDC PEA Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>2019 October</td>
<td>GDC STDT Final Report release</td>
</tr>
<tr>
<td></td>
<td>GDC Pre-Project Office established (GSFC)</td>
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<tr>
<td>2020 September</td>
<td>GDC KDP A (project)</td>
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<tr>
<td>2021 March 5</td>
<td>GDC PEA, draft release</td>
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<tr>
<td>2021 June 2</td>
<td>GDC PEA, final release</td>
</tr>
<tr>
<td><strong>2021 June 16</strong></td>
<td><strong>GDC Pre-Proposal Conference</strong></td>
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<tr>
<td>2021 June 23</td>
<td>Due date, mandatory NOI (11:59pm EDT)</td>
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<tr>
<td>2021 September 1</td>
<td>Due date, proposals and files (11:59pm EDT)</td>
</tr>
<tr>
<td>2022 January (target)</td>
<td>Selections announced</td>
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<tr>
<td>2023 Q1 (est.)</td>
<td>Decision, final number of spacecraft</td>
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<tr>
<td>2024 Q4 (est.)</td>
<td>GDC KDP C (project)</td>
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<tr>
<td>2025 October</td>
<td>Delivery of flight units begin</td>
</tr>
<tr>
<td>2027 September</td>
<td>Launch Readiness Date</td>
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GDC (Pre-)Formulation

• GDC is being formulated based on
  – the focused STDT-identified science objectives and measurement requirements, and
  – minimizing project risk while retaining flexibility to maximize science.

• Project baseline implementation
  – Primary Physical Parameters prioritized, secondary Physical Parameters within available resources [PEA Sec. 1.1, 2.4, 5.5.1, 7.2.1; Q. S-13, S-20]
  – Six identical observatories, potential seventh and eighth observatories [PEA Sec. 5.2.1, 5.5.1]

• Project threshold implementation
  – Primary Physical Parameters
  – Four identical observatories [PEA Sec. 2.4, 5.2.3]
GDC as a Community Mission

- NASA Policies on Harassment and Discrimination [PEA Sec. 4.5]
  - NASA recognizes and supports the benefits of having diverse and inclusive scientific, engineering, and technology communities and fully expects that such values will be reflected in the composition of all proposal teams as well as peer review panels (science, engineering, and technology), science definition teams, and mission and instrument teams.
  - Discrimination and harassment, including sexual harassment, are not tolerated at NASA. Having a diverse, inclusive, and safe workplace is essential to achieving the excellence for which NASA strives.
  - Proposers and contractors are urged to be conscientious in ensuring that their officers, researchers and employees abide by anti-discrimination and anti-harassment laws at all times, both in their own workplaces and at NASA facilities.
GDC as a Community Mission

- NASA is formulating GDC as a strategic focus for its study of Earth’s upper atmosphere
  - Community accessibility, engagement
  - Contribute to space weather activities [PEA Sec. 4.3.3, 5.2.6, Req. P-4]
  - Data access, usefulness, usability [PEA Sec. 4.3.2, 4.3.3, 4.4.2; Req. P-4]
    - Data products shared with entire GDC science team immediately [PEA Sec. 4.3.1]
    - Data inter- and cross-calibration [PEA Sec. 5.3.2; Req. P-17]
    - Make data public as rapidly as possible, maximum of six-month data latency
    - Delivery to NASA Heliophysics data archive on schedule
    - Implementing new requirements on PDMP and CMAD
  - Code access, usefulness, usability [PEA Sec. 4.4.3; Req. P-5]
    - Open source for scientific software and tools developed [Req. P-5; Q. S-15]
GDC as a Community Mission

• The GDC mission and mission science require all selected investigations and investigators to work as a single team

• Every PI is responsible for the execution of their investigation and for their Co-Is’ interaction with the GDC project

• The GDC science team is composed of three groups of individuals [PIP Sec. 10.3.2]
  – GDC science investigations (this PEA)
  – GDC Interdisciplinary Scientists
  – Other individuals added by NASA

• Project-wide “Rules of the Road” document to be written in Phase A [PEA Sec. 2.5]
GDC Investigations: Science Investigation

- Proposals shall address only PEA-identified GDC Science Objectives [Req. P-6]
  - PEA-identified Objectives are a subset of the STDT-prioritized science objectives
  - No requirement on number of GDC Science Objectives to be addressed [Q. S-2]
  - No requirement on how much of a GDC Science Objective is addressed

- PIP identifies “sub-objectives” based on STDT report discussions
  - Included for transparency of pre-formulation work
  - Not requirements or constraints on proposal science objectives [Q. S-10, S-12]
GDC Investigations: Science Investigation

- Proposals shall flow investigation science objectives into high-level science requirements and implementation-specific requirements [Req. P-8; Q. S-19]
  - Describe observations necessary for science objectives, regardless of whether acquired by investigation instrument, other GDC instruments, or non-GDC assets [Req. P-16]

- Investigations shall be achievable with GDC Design Reference Mission [Req. P-9, P-12]
  - Proposals shall describe DRM attributes that affect achievability [Req. P-9]
  - Program Library: Project Specific Documents, 4. Science Planning Resources

- Threshold Investigations shall be achievable with the GDC threshold implementation [Req. P-12]
  - Proposals may include measurements provided by the investigation that are outside of the GDC threshold investigation [Req. P-12; Q. S-9, O-1]
GDC Investigations: Instruments

- Solicitation for single instruments, suites are not permitted [PEA Sec. 1.1, Q. S-3]
  - Proposal responsiveness assessed at all steps of solicitation process [Q. E-1]

- Instruments must measure at least one of the GDC Physical Parameters [PEA Table 1; PEA Sec. 5.2.1; Q. S-6, S-17]
  - Measurement characteristics are not performance requirements
  - Proposals set their own performance requirements
  - Proposals expected to balance investigation needs, other investigation expected needs, spacecraft resources

- Science payload resource envelope developed in pre-formulation work [PEA Table 2, Q. T-12]
  - Multiple flight heritage instruments, not biased towards any provider [PEA Sec. 2.6]
GDC Investigations: Instruments

- Increased focus on topics specific to constellation missions, data usefulness and usability
  - Instrument fabrication [PEA Sec. 7.1]
    - See TMC Review
  - Instrument calibration [PEA Sec. 4.3.3, 7.1; Req. P-3, P-17]
  - Data products [PEA Sec. 4.3.3; Req. P-4]

- Investigations shall deliver 6 flight units, may be required to deliver 1 or 2 additional flight units (i.e. 7th or 8th)
  - Additional flight units are budgeted using encumbered reserves
  - Delivery of additional flight units should be shown in a supplementary schedule
Selection Process

• Selection will proceed according to SALMON-3 standard process with two exceptions [SALMON-3 Sec. 7.3; PEA Sec. 7.2]
  – Pre-Selection Accommodation Study
  – Two identified selections
    • Selection for technical maturation
    • Selection of complete science payload for flight

• Pre-Selection Accommodation Study to inform selection [PEA Sec. 7.2.1]
  – Required Instrument Accommodation Table as part of proposals [Req. P-14]
  – Results will not be input to the proposal evaluation (Forms A, B, C)
  – Will consider the science payload as a whole
    • Instrument Accommodation Table asks about potential impacts onto other instruments, from other instruments
Selection Process

• Selection will be for investigations that deliver the complete science payload for flight
  – Emphasis on cost-effective, resource-efficient investigations with significant science return [PEA Sec. 1.1]
  – Primary Physical Parameters prioritized, secondary Physical Parameters as resources permit [PEA Sec. 1.1, 7.2]

• Technical maturation of instrument(s) measuring the local neutral wind velocity [PEA Sec. 7.2.2]
  – Outside of the GDC project, managed by LWS Program Office
  – Mature to TRL 6 on a schedule parallel to GDC project development timeline
  – Not limited to proposals assigned a Category III [SALMON-3 Sec. 7.1.2]
Questions?

Answers to previously submitted questions:
https://lws.larc.nasa.gov/gdc/faq.html
(Questions & Answers tab on SOMA’s GDC Acquisition Homepage)

Questions accepted up to 21 days before the proposal due date [PEA Sec. 9]
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