

# NSERC Discovery Grants

## An Insiders View

Larry W. Kostiuik  
Co-Chair, Fluids GSC 1512

# Roles and Responsibilities

- December 15, 2010 – memory stick arrives
- 1<sup>st</sup> Internal Reviewer – 8
  - First person to speak to case – sets the tone
- 2<sup>nd</sup> Internal Reviewer – 9
  - Contrast, support, or add missing material to case
- Reader – 21
  - Be prepared to challenge, debate, argue, and influence the points made by 1<sup>st</sup> and 2<sup>nd</sup> Internal Reviewers

# Example Titles (Note: I am a combustion person)

- **Tools for the numerical simulation of turbulent combustion**
- Heat Transfer Processes in Micro and Nano-Scale Structures
- Horizontal Flow Critical Heat Flux
- **Tools for phenogenomic studies on chip.**
- Whole building energy simulation models
- **Trigeneration and district energy**
- Clean Non-Premixed Combustion
- Building Smoke Management
- **Molecular Models of Thermal Energy Conversion**
- **Drive Cycles for Prototyping and Consumer Selection of Plug-In Hybrid Vehicles**
- Gas Combustion in Fluidized Beds
- Boiling Phenomena in Liquid Jet Impingement
- **Canada's Renewable Energy Strategies**
- **Methodology for Assessment of High-Performance Windows and Façades**
- Energy-efficient building Design

# Completing the Rating Forms

- Three Equally Weighted Categories
  - Excellence of Research
  - Merit of Proposal
  - Contributions to Training of HQP
- Only allowed to use information in package
  - Forms 100 and 101
  - Four Contributions
  - External Referee Reports (1 - 5)



Map one onto  
the other

# Two Approaches

1. Read the whole application package, then fill out the rating Form
  2. Pick a category (Researcher, Proposal, HQP), then mine the application package for data
- My Opinion – most people use the second approach, so make it easy for the miners

# Excellence of Researcher

- Reviewers' Focus
  - Knowledge, expertise and experience
  - Past **or potential** contributions to, and impact on, the **proposed and other** areas of research
  - Importance of contributions
- What information helps address this category and where will you find it????

# Excellence of Researcher

- Form 100
  - Current / Past Position(s) (a bit of context)
  - Financial Support for Work (opinion of industry, government)
  - Most Significant Research Contributions (applicant's opinion)
  - Refereed Journal Publications (number / where published)
  - Editorships / Invited Talks (status in community)
- Form 101 (essentially nothing)
- Contributions (need to know area well to understand value – not usually in your area)
- External Reviewers' Opinions (opinion from some peers)

# Contributions to HQP

- Reviewers' Focus
  - Quality and extent of past contributions
  - Appropriateness of the proposal for the training of HQP
- What information helps address this category and where will you find it????



# Contributions to HQP

- Form 100
  - HQP Table (BSc, MSc, PhD, PDF) (quantities)
  - Where are They Now Table (qualities)
  - Co-Authorship on Papers (engagement)
  - Section 5 – Philosophy of Training HQP (engagement)
- Form 101
  - Budget
  - Relevance of Training to HQP's Careers / Industry
- Contributions
- External Reviewers' Opinions

# Merit of Proposal

- Finally, the Proposal
- Reviewers' Focus
  - Discussion of relevant issues
  - Originality and innovation
  - Clarity and scope of objectives
  - Methodology and feasibility
  - Anticipated significance

# Merit of Proposal

- Form 100
- Form 101
  - Knowledge the key issues (background)
  - Originality and innovation (contrast the background)
  - Clarity of scope and objectives (should be easy to do)
  - Describe methodology (build trust/confidence that you can do work)
  - Significance (connect all the way up to society, not just peers)
- Contributions
- External Reviewer's Opinions

# A Better Form 100

- Dominant input for 2 of the 3 categories
- Nothing can significantly affect this while writing your proposal
- All about the past (the last 6 years, and just the facts)
  - Publish good work in good places (common peers: 20 papers)
  - Always engage students (common peers: 2 BSc, 4 MSc, and 3 PhD)
  - Be the PI and non-PI on grants/contracts
  - Keep track of your students, get them good jobs
  - Do not overstate contributions (will be punished)
  - Become a co-editor or an officer of a technical society
  - Give invited talks
  - Actively train your HQP

# A Better Form 101 - Part I

- Summary of Proposal (Public Release)
  - Cannot overstate importance of this section (only one member on committee knows area)
  - Chance to state clearly and succinctly proposal's objectives, significance, and contributions to HQP
- Budget / Justification (can only be neutral or negative)
  - Stupid section (not everyone agrees with me on this point)
  - Safest, plan for 85% of money to students

# A Better Form 101 - Part II

- Up-to-date background (not all references from 1990s or earlier)
  - Demonstrates that you know key issues in the literature (if you don't, will you be punished)
- Proposal should contrast the background
  - Have a part that is incremental (shows feasibility)
  - Have a part that is reaching for the stars (shows originality / innovativeness)
  - No more than 3 topics (focused objectives / clarity)
  - Do not be deliberately controversial (controversy is not innovative)

# A Better Form 101 - Part II

- Methodology
  - Build confidence (show access to necessary facilities and demonstrate expertise in techniques)
  - Space limited, so stay at high level
- Significance (Find something, as long as plausible)
  - Half the voters connect only to societal impact (not to some obscure scientific point)
  - If have other financial support for work (industry or government), exploit this interest as significance

# Moving Into a New Area

- High Risk
  - May not know all the key issues (will be punished)
  - May not have experience in methodology (will be punished)
  - May not look focused as you just explore (will be punished)



# External Reviewer Reports

- External Reviewer Reports arrived January 15, 19, and 26, and February 2.
- Meeting started on January 30
- Hence, last input comes from external reviewers
  - Chance to see if outside opinion agrees with yours
  - 30% contain some “disruptive” information (requires you to go back over case to fact check)
- It matters who the reviewer is
- Their opinions are valued - as part of the package

# Summary

- Help map application information onto positive aspects of each category
  - Well structured, well written for non-expert
- Recognize the relative value of package
  - Form 100 (you are who you are)
  - Form 101 (can make a big difference while writing proposal)
  - Contributions
  - External Reviewers' Comments
- Avoid the obvious blunders, as highlighted