EERE 124: FOA Webinar
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U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Fuel Cell Technologies Incubator
Innovations in Fuel Cell and Hydrogen Fuel Technologies

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FOA Webinar

DE-FOA-0000966
6/11/2014

Anticipated Schedule:

FOA Issue Date:	**6/5/2014**
FOA Informational Webinar:	6/11/2014
Submission Deadline for Concept Papers:	7/7/2014
Submission Deadline for Full Applications:	9/3/2014
Submission Deadline for Replies to Reviewer Comments:	10/14/2014
Expected Date for EERE Selection Notifications:	December 2014
Expected Timeframe for Award Negotiations:	December 2014/ January 2015

Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement DE-FOA-0000966 **("FOA")** and adhere to the stated submission requirements.
- This presentation summarizes the contents of the FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document and applicants should rely on the FOA language and seek clarification from EERE.
- If you believe there is an inconsistency, please contact FCTOIncubator@go.doe.gov.

Agenda

1) FOA Description
2) Topic Areas/Technical Areas of Interest
3) Award Information
4) Statement of Substantial Involvement
5) Cost Sharing
6) Concept Papers
7) Full Applications
8) Merit Review and Selection Process
9) Registration Requirements

FOA Description

- The U.S. Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE) is an organization focused on achieving aggressive and well-defined mid-to-long term clean energy goals for the United States of America. In that context, EERE has established multi-year plans and roadmaps. EERE focuses the majority of its resources on a limited number of "highest probability of success" pathways/approaches to ensure that the program initiatives are supported at a critical mass (both in terms of dollars and time) for maximum impact.
- This roadmap-based approach is one of EERE's greatest strengths, which can create challenges in recognizing and exploring unanticipated, game changing pathways/approaches which may ultimately be superior to the pathways/approaches on our existing roadmaps.

FOA Description

- To enhance the responsiveness of the roadmap approach, EERE is issuing "Incubator" Funding Opportunity Announcements (FOAs) within its existing Offices and programs to support innovative technologies and solutions that could help meet existing goals but are not represented in a significant way in the Offices' existing Multi-Year Program Plans (MYPPs) or current portfolios. The Incubator programs will allow EERE to assess new technologies for their potential to be “on ramped” to future MYPPs. Successful incubator projects will reduce the risk associated with potentially breakthrough approaches and technologies so that they could be viable candidates for inclusion in future program roadmaps.

FOA Description

This FOA represents an extension of the incubator approach to the Fuel Cell Technologies Office (FCTO). FCTO is a key component of the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) portfolio. Fuel cells powered by hydrogen from renewable or low-carbon resources can lead to substantial energy savings and reductions in imported petroleum and carbon emissions. The FCTO aims to provide clean, safe, secure, affordable, and reliable energy from diverse domestic resources, providing the benefits of increased energy security and reduced criteria pollutants and green-house gas emissions by adopting a technology–neutral approach toward RD&D to address both key technical challenges for fuel cells and hydrogen fuels (i.e. hydrogen production, delivery and storage) and institutional barriers such as hydrogen codes and standards.

FOA Description

More detailed descriptions of the FCTO Programs, including technical and cost targets as well as technical challenges and barriers that need to be overcome, can be found in the Multi-Year Research, Development and Demonstration Plan (MYRD&D)at: http://www1.eere.energy.gov/hydrogenandfuelcells/mypp/.

Information on previous and existing projects within the FCTO portfolio can be found in the DOE Hydrogen and Fuel Cells Program Annual Progress Reports at:

http://www1.eere.energy.gov/hydrogenandfuelcells/annual_reports.html

Topic Areas/Technical Areas of Interest

The purpose of this Funding Opportunity Announcement (FOA) is to provide funding for game changing technologies and strategies to reach FCTO targets and goals through approaches and pathways either not- or under-represented in the FCTO MYRD&D plan, and RD&D portfolio. It is not to support efforts leading to incremental improvements to current products or processes or for additional R&D on established areas in the FCTO roadmaps and R&D portfolios. Given the level of development, the awards will be structured around strict comprehensive, quantifiable go/no go decision points that seek to progressively reduce risk in the projects.

Topic Areas/Technical Areas of Interest

Applications are invited for the research and development of hydrogen and fuel cell technologies demonstrating the potential for high market impact and for accelerated progress towards meeting FCTO goals and targets (See MYRD&D plan) including, but not limited to:

- A direct hydrogen fuel cell power system for transportation with 60% peak-efficient, 5,000 hour durability and a cost of $30/kW to be competitive with gasoline vehicles.
- Hydrogen production and delivery at a cost of $2-$4/kg of hydrogen (produced and dispensed but untaxed) by 2020.
- Onboard hydrogen storage for light duty vehicles that has a potential for a system volumetric density greater than 40 g hydrogen per liter and that can be refueled at pressures of 350 bar or less to enable a driving range of more than 300 miles.

Applicants are required to describe or illustrate how their proposals address these or other FCTO goals and targets.

Topic Areas/Technical Areas of Interest

This FOA is open to any and all impactful ideas which significantly advance the mission of the FCTO (and which FCTO is not currently supporting in a substantial way). The FOA will give equal consideration to all applications submitted, including submissions which address the following areas of particular interest:

- Platinum Group Metal (PGM)-free catalysts and membrane electrode assemblies (TRL 2-4). Applications are invited for novel cathode Platinum Group Metal (PGM)-free catalysts for the oxygen reaction and PGM-free cathode membrane electrode assemblies (MEAs) for low-temperature and high-temperature polymer electrolyte membrane fuel cells (PEMFCs) and phosphoric acid fuel cells (PAFCs). For alkaline membrane fuel cells (AMFCs), the development of innovative PGM-free anode catalysts for the hydrogen oxidation reaction, PGM-free cathode catalysts for the oxygen reaction and PGM-free MEAs are of interest. Cathode PGM-free catalyst approaches should exclude the development of carbon-nitrogen complex based catalysts.

Topic Areas/Technical Areas of Interest

- Fuel cell–based electrochemical conversion devices for stationary energy storage (TRL 2-5). Approaches of interest include the development of innovative polymer electrolyte, alkaline membrane electrolyte and solid oxide electrolyte based unitized reversible fuel cells, as well as regenerative flow cells/flow batteries that could address renewable energy intermittency in an efficient and cost-effective manner.

- Completely innovative hydrogen production and delivery technologies to reach the DOE cost goal of $2-$4/kg of hydrogen (produced and dispensed but untaxed) (TRL 2-5). Applications are invited for novel approaches to hydrogen production through renewable pathways such as thermochemical conversion of biomass-derived feedstocks, and direct solar water splitting (at semi-central or central scale production). Innovative materials, components, and systems are needed to establish the technical and cost feasibility for hydrogen delivery. These include forecourt technologies (e.g., compressors, storage vessels, hoses, meters, dispensers, etc.) for 700 bar dispensing and 875 bar or greater forecourt storage, as well as next generation technologies for hydrogen transmission and distribution.

Topic Areas/Technical Areas of Interest

- Breakthrough, reversible hydrogen storage materials that operate at hydrogen pressures of 350 bar or less (TRL 2-5). Applications are invited for completely novel materials-based approaches, not previously supported through the program, to meet the onboard light-duty vehicle storage system target of 40 grams of hydrogen per liter system volume at operating pressures of 350 bar or less. Consideration must also be given to the system mass, cost and refill time for proposed concepts as compared with DOE system targets.

- Hydrogen infrastructure (TRL 9-10). Manufacturing solutions for low-cost, standardized skid-mounted hydrogen fueling stations; and game-changing business models/financial approaches to address infrastructure costs (e.g., including soft costs) are of interest.

Non-Responsive Applications

The following types of applications will be deemed nonresponsive and will not be reviewed or considered for an award:

- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).
- Solutions, approaches, or technologies similar to those already being investigated through current or recent FCTO projects in the portfolio.
- High temperature solid oxide fuel cell technologies, including coal-fueled systems, and other activities that fall under the scope of Fossil Energy's Solid-State Energy Conversion Alliance (SECA).

Non-Responsive Applications Continued

- Technologies/approaches leading to only incremental improvements, already commercially established and demonstrated (e.g. steam methane reforming of natural gas), or already well represented in the FCTO portfolio (e.g., PEM fuel cells and electrolyzers, including low-PGM catalysts and membrane assemblies; cathode PGM-free nitrogen-carbon complex based catalysts, polymer electrolyte membranes operating under dry and hot conditions (up to 120°C) for automotive applications; bipolar plates; and balance of plant components, including humidifiers and air management systems, for automotive fuel cell applications).

Award Information

Total Amount to be Awarded	$4.6M*
Average Award Amount	EERE anticipates making awards that range from $500,000 to $1,000,000.
Types of Funding Agreements	Cooperative Agreements
Period of Performance	12 to 24 months
Cost Share Requirement	20% of Total Project Costs for research and development projects and 50% of Total Project Costs for demonstration projects

*Subject to the availability of appropriated funds

Statement of Substantial Involvement

EERE has substantial involvement in work performed under Awards made following this FOA. EERE does not limit its involvement to the administrative requirements of the Award. Instead, EERE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

- EERE shares responsibility with the Prime Recipient for the management, control, direction, and performance of work under this award.

- EERE reviews and approves in a timely manner project plans, including project management, testing and technology transfer plans, and recommending alternate approaches, if the plans do not address the critical programmatic issues.

- EERE participates in project management planning activities, including risk analysis, to ensure EERE Technology Office requirements or limitations are considered in performance of the work elements.

Statement of Substantial Involvement - Continued

- EERE may intervene in the conduct or performance of work under this Award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.

- EERE promotes and facilitates technology transfer activities, including disseminating Technology Office results through presentations and publications.

- EERE may redirect or discontinue funding projects that fail to fully and satisfactorily complete the work described in the Statement of Project Objectives as evaluated at the Go/No Go decision points.

- EERE participates in major project decision-making processes.

Cost Sharing Requirements

- The cost share must be at least 20% of Total Project Costs for research and development projects

- The cost share must be at least 50% of Total Project Costs for demonstration projects

Cost Share Contributions

- Contributions must be:
  - Specified in the project budget
  - Verifiable from the Prime Recipient's records
  - Necessary and reasonable for proper and efficient accomplishment of the project
- Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred

Allowable Cost Share

- Cost Share must be allowable and must be verifiable upon submission of the Full Application
- Refer to the following applicable Federal cost principles:

Entity	Cost Principles
Educational Institutions	2 CFR Part 220
State, Local, and Indian Tribal Governments	2 CFR Part 225
Non-profit Organizations	2 CFR Part 230
For-profit Organizations	FAR Part 31

Allowable Cost Share

- Cash Contributions
  - o May be provided by the Prime Recipient, Subrecipients, or a Third Party
- In-Kind Contributions
  - o Can include, but are not limited to donation of: personnel costs, indirect costs, facilities and administrative costs, rental value of buildings or equipment, and the value of a service, other resource, or third party in-kind contribution

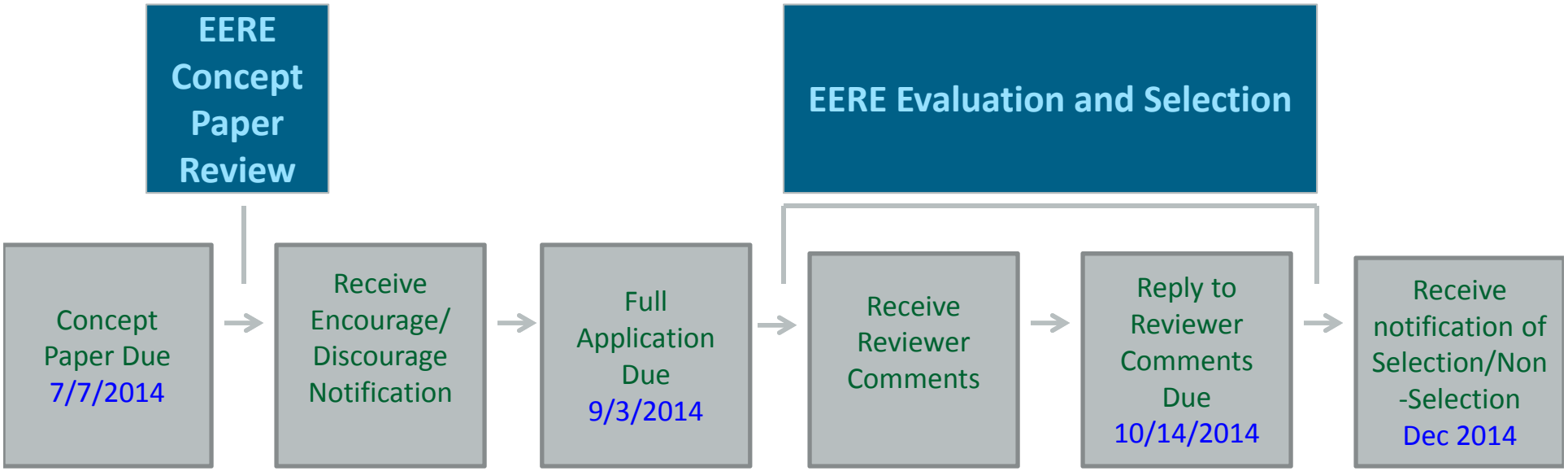
Unallowable Cost Share

- The Prime Recipient may not use the following sources to meet its cost share obligations including, but not limited to:
  - Revenues or royalties from the prospective operation of an activity beyond the project period
  - Proceeds from the prospective sale of an asset of an activity
  - Federal funding or property
  - Expenditures reimbursed under a separate Federal Technology Office
  - Independent research and development (IR&D) funds
  - The same cash or in-kind contributions for more than one project or program

Cost Share Payment

- Recipients must provide documentation of the cost share contribution, incrementally over the life of the award
- The cumulative cost share percentage provided on each invoice must reflect, at a minimum, the cost sharing percentage negotiated
- In limited circumstances, and where it is in the government's interest, the EERE Contracting Officer may approve a request by the Prime Recipient to meet its cost share requirements on a less frequent basis, such as monthly or quarterly. See Section III.B.7 of the FOA.

FOA Timeline



EERE anticipates making awards by Dec 2014/Jan 2015

Concept Papers

- Applicants must submit a Concept Paper
  - Each Concept Paper must be limited to a single concept or technology
- The Concept Paper must include a technology description (See Section IV.C of the FOA)
  - The technology description is limited to 3 pages
  - The Concept Paper can also include graphs, charts, or other data (limited to 1 pages)
- Concept Papers must be submitted by 7/7/2014, 5 PM ET through EERE Exchange, and must comply with the content and form requirements in Section IV.C of the FOA
- EERE provides applicants with: (1) an "encouraged" or "discouraged" notification, and (2) general comments

Concept Paper Review

EERE evaluates the Concept Papers based on the following technical review criteria:

- **Criterion 1: Extent to Which the Proposed Approach/Solution is New to the Office Portfolio (33.4%)**

- **Criterion 2: Impact on Office Mission and National Energy Goals if Successful (33.3%)**

- **Criterion 3: Technical Merit (33.3%)**

Full Applications

- The Full Application includes:
  - **Technical Volume**: The key technical submission - info relating to the technical content, project team members, etc.
  - **SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant.
  - **SF-424A Budget & Budget Justification:** a detailed budget and spend plan for the project.
  - **Summary for Public Release**
  - **Summary Slide**
  - **Administrative Documents:** E.g., U.S. Manufacturing Plan, FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc

Full Applications: Technical Volume Content

- **Technical Volume: the key technical component of the Full Application**

Content of Technical Volume	Suggested % of Technical Volume
Cover Page	
Project Overview	10%
Technical Description, Innovation and Impact	25%
Workplan	50%
Technical Qualifications and Resources	15%

Full Application Eligibility Requirements

- Applicants must submit a Full Application by 9/3/2014
- Full Applications are eligible for review if:
  - The Applicant is an eligible entity Section III.A of FOA;
  - The Applicant submitted an eligible Concept Paper;
  - The Cost Share requirement is satisfied Section III.B of FOA;
  - The Full Application is compliant Section III.C of FOA; and
  - The proposed project is responsive to the FOA Section III.D of FOA
  - The Full Application meets any other eligibility requirements listed in Section III of the FOA.

Who's Eligible to Apply?

Eligible applicants for this FOA include:

1. Individuals
2. Domestic Entities
3. Foreign Entities
4. Incorporated Consortia
5. Unincorporated Consortia

FFRDCs will not be allowed to apply as the prime recipient.

For more detail about each eligible applicant, please see Section III.A of the FOA for eligibility requirements

Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Multiple Applications

Applicants may submit more than one application to this FOA, provided that each application describes a unique, scientifically distinct project

Merit Review and Selection Process (Full Applications)

- The Merit Review process consists of multiple phases that each include an initial eligibility review and a thorough technical review
- Rigorous technical reviews are conducted by reviewers that are experts in the subject matter of the FOA
- Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, to make the selection decisions

Technical Merit Review Criteria

Criterion 1: Impact on Office Mission and National Energy Goals If Successful (50%)

- The proposed approach or technology, if successful, represents a measureable and significant advancement over current state-of-the art technology and practice.
- Degree that the proposed project is innovative and unique.
- The relevance and impact of the goals and objectives of the project to FCTO mission, goals and targets, including FCTO's Multi-Year Program Plan (MYPP).
- Demonstration of a profound understanding of the current approach and/or state-of the-art.
- Demonstration of an awareness of competing approaches or technologies and identification of how the proposed project has advantages over these competing approaches.
- Validity and likelihood of success of the proposed manufacturing and/or commercialization strategy.
- The degree to which the proposed technology is new to FCTO's portfolio.

Technical Merit Review Criteria - Continued

Criterion 2: Quality and Technical Merit of Proposed Work Plan and Milestones (30%)

- Clearly defined project outcome and deliverables.
- Demonstration of a sound technical approach to accomplish the proposed objectives.
- The potential for the proposed project to meet the project objectives and goals based on the proposed tasks, milestones, and methodology.
- The clarity, quality, and reasonableness of the work plan, including the project schedule, task descriptions, milestones, and go/no go decision points.
- Submission of a development plan, technical information, test results and data that demonstrates credible and well-justified technical potential to meet or exceed any defined targets or goals.

Technical Merit Review Criteria - Continued

Criterion 3: Capabilities and Resources of the Team (20%)

- Degree to which the roles and responsibilities of the project team members are clearly defined and demonstrate an effective plan to manage the resources.
- Demonstrated experience and commitment of the project team to manage and implement projects of similar risk and complexity (all project aspects, including scope, cost, and schedule) that have led to successful development and commercialization.
- Collaboration of teaming partners on past projects.
- Credentials, capabilities, and experience of proposed team members/key personnel.
- Access to the facilities and equipment necessary to accomplish the project or clearly define how the necessary equipment and facilities will be obtained.

Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- To be considered by EERE, a Reply must be submitted by 10/14/2014 and submitted through EERE Exchange
- Content and form requirements:

Section	Page Limit	Description
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	1 page max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

Selection Factors

The Selection Official may consider the merit review recommendation, program policy factors, and the amount of funds available in arriving at selections for this FOA

Program Policy Factors

The Selection Official may consider the following program policy factors in making his/her selection decisions:

- The degree to which the proposed project, including proposed cost shares, optimizes the use of available EERE funding to achieve programmatic objectives;
- The level of industry involvement and demonstrated ability to commercialize energy or related technologies;
- Technical, market, organizational, and environmental risks associated with the project;
- Whether the proposed project is likely to lead to increased employment and manufacturing in the United States;
- Whether the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty;
- The degree to which the proposed project directly addresses EERE's statutory mission and strategic goals.
- The proposed approach/solution is new to the office portfolio.
- Potential for significant market impact.
- Likelihood that the successful completion of the proposed project would result in a technology or solution that could be incorporated into the Fuel Cell Technology Office multi-year Program Plan

Registration Requirements

- To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange: https://eere-Exchange.energy.gov
- Obtain a "control number" at least 24 hours before the first submission deadline
- Although not required to submit an Application, the following registrations must be complete to receive an award under this FOA:

Registration Requirement	Website
DUNS Number	http://fedgov.dnb.com/webform
SAM	https://www.sam.gov
FedConnect	https://www.fedconnect.net
Grants.gov	http://www.grants.gov

Means of Submission

- Concept Papers, Full Applications, and Replies to Reviewer Comments must be submitted through EERE Exchange at https://eere-Exchange.energy.gov
  - EERE will not review or consider applications submitted through other means
- The Users' Guide for Applying to the Department of Energy EERE Funding Opportunity Announcements can be found at https://eere-Exchange.energy.gov/Manuals.aspx

Key Submission Points

- Check entries in EERE Exchange
  - Submissions could be deemed ineligible due to an incorrect entry
- EERE strongly encourages Applicants to submit 1-2 days prior to the deadline to allow for full upload of application documents and to avoid any potential technical glitches with EERE Exchange
- Make sure you hit the submit button
  - Any changes made after you hit submit will un-submit your application and you will need to hit the submit button again
- For your records, print out the EERE Exchange Confirmation page at each step, which contains the application's Control Number

Applicant Points-of-Contact

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations
- It is imperative that the Applicant/Selectee be responsive during award negotiations and meet negotiation deadlines
  - Failure to do so may result in cancellation of further award negotiations and rescission of the Selection

Questions

- Questions about this FOA? Email FCTOIncubator@go.doe.gov
  - All Q&As related to this FOA will be posted on EERE Exchange
    - You must select this specific FOA Number in order to view the Q&As
  - EERE will attempt to respond to a question within 3 business days, unless a similar Q&A has already been posted on the website
- Problems logging into EERE Exchange or uploading and submitting application documents with EERE Exchange? Email EERE- ExchangeSupport@hq.doe.gov.
  - Include FOA name and number in subject line