



**GRANT REQUEST FORM (GRF)**

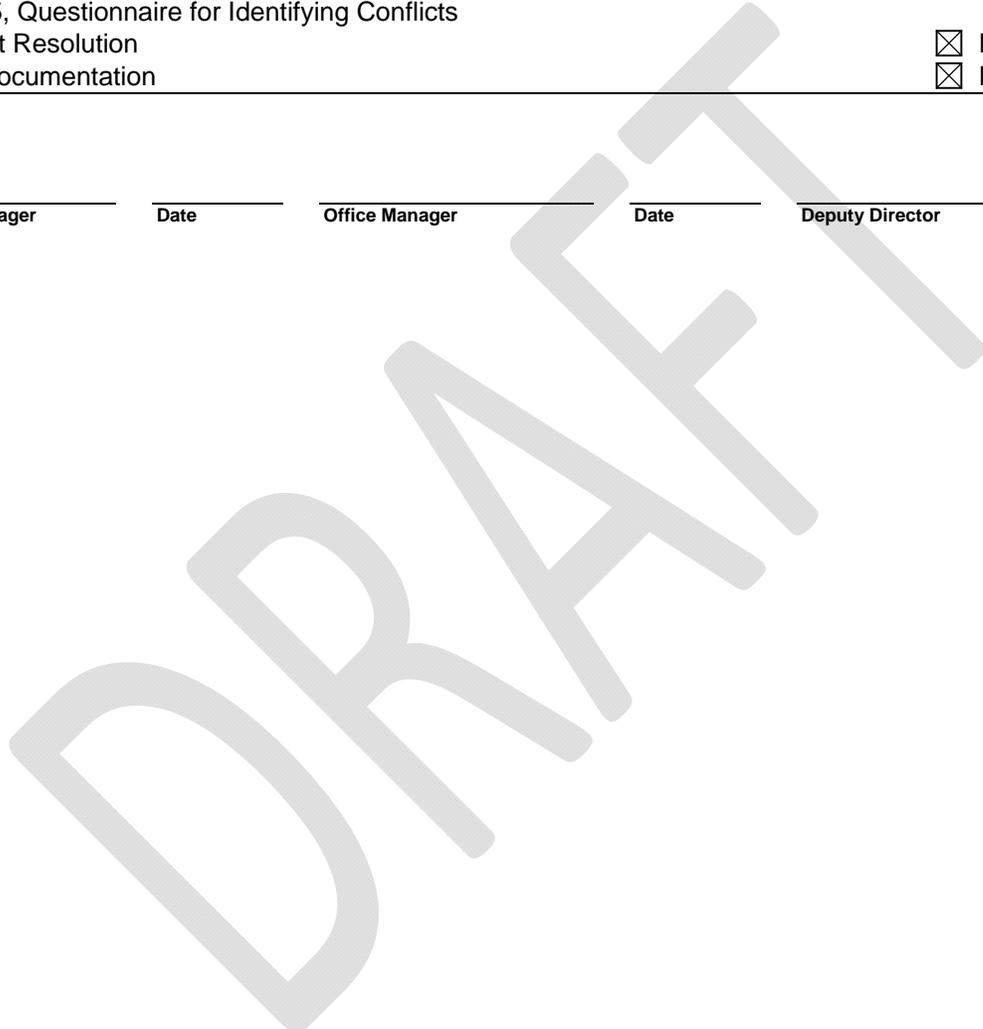


Address:	12949 ALCOSTA BLVD	Address:	12949 ALCOSTA BLVD		
City, State, Zip:	SAN RAMON, CA 94583-1323	City, State, Zip:	SAN RAMON, CA 94583-1323		
Phone:	925-866-5614 /	Fax:	- -		
E-Mail:	dzabrowski@fishnick.com		E-Mail:	dzabrowski@fishnick.com	

<b>Selection Process Used</b>	
<input checked="" type="checkbox"/> Competitive Solicitation	Solicitation #: PON-13-503
<input type="checkbox"/> First Come First Served Solicitation	

<b>The following items should be attached to this GRF</b>	
1. Exhibit A, Scope of Work	<input checked="" type="checkbox"/> Attached
2. Exhibit B, Budget Detail	<input checked="" type="checkbox"/> Attached
3. CEC 105, Questionnaire for Identifying Conflicts	<input checked="" type="checkbox"/> Attached
4. Recipient Resolution	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached
5. CEQA Documentation	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Attached

\_\_\_\_\_ Agreement Manager      \_\_\_\_\_ Date      \_\_\_\_\_ Office Manager      \_\_\_\_\_ Date      \_\_\_\_\_ Deputy Director      \_\_\_\_\_ Date



# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### I. TASK AND ACRONYM/TERM LISTS

##### A. Task List

Task #	CPR <sup>1</sup>	Task Name
1		Project Administration
2		Contract Execution
3	X	Field Demonstration of Baseline Hot Water System
4		Field Demonstration of Optimized Hot Water System
5	X	Lab Testing and Demonstration of Baseline and Optimized System and Design Tool Development
6		Evaluation of Project Benefits
7		Technology/Knowledge Transfer Activities

##### B. Acronym/Term List

Acronym/Term	Meaning
ATS	PG&E Applied Technology Services Laboratory
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CEC	California Energy Commission
CFS	Commercial Food Service
CPR	Critical Project Review
FSTC	Food Service Technology Center
M&V	Measurement and Verification
TAC	Technical Advisory Committee

#### II. PURPOSE OF AGREEMENT, PROBLEM/SOLUTION STATEMENT, AND GOALS AND OBJECTIVES

##### A. Purpose of Agreement

The purpose of this Agreement is to demonstrate hot-water-system-specific energy efficiency measures in commercial food service (CFS) facilities by optimizing the distribution system and adding dishwasher waste heat recovery. This combination will allow for synergetic gains in efficiency throughout the system and improved performance at end-use fixtures.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

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### SCOPE OF WORK

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#### 1 **Problem/ Solution Statement**

##### 3 **Problem**

4 Many of the changes to commercial hot water systems have been focused on efficiency  
5 improvements at the heater and water-reduction measures at end-use fixtures.  
6 However, this single component-based approach has not significantly improved the  
7 efficiency or performance of modern hot water systems installed in commercial kitchens.  
8 Innovative and emerging technologies do currently exist which could contribute to  
9 greatly improving the efficiency of these systems. Combined with the design of  
10 optimized distribution systems, these technologies are capable of improving delivery  
11 performance. But, despite their availability, these optimized energy-efficient  
12 technologies are not widely used in the market, and improving the design and efficiency  
13 of distribution systems has been largely neglected in the industry.

##### 15 **Solution**

17 This demonstration will validate the energy-savings of high-efficiency equipment and  
18 advanced distribution system designs, and validate optimization techniques to  
19 encourage the hot water system and kitchen design community to adopt these  
20 measures. These objectives will be achieved through a collaborative design,  
21 demonstration, and dissemination program to measure existing use of conventional hot  
22 water systems in commercial kitchens, optimize the system and measure savings,  
23 validate and individually quantify energy saving measures in the laboratory and develop  
24 a design tool and cost calculator to propel the industry forward.

#### 26 **B. Goals and Objectives of the Agreement**

##### 28 **Agreement Goals**

29 The goals of this Agreement are to:

- 30 • Demonstrate that quantifiable energy savings as a result of optimized distribution  
31 systems and high-efficiency equipment can be achieved across an array of hot water  
32 system configurations.
- 33 • Enhance the guidelines for improving the design of hot water systems.
- 34 • Accelerate the adoption of hot-water-system-specific energy efficiency measures in  
35 CFS

##### 37 **Agreement Objectives**

38 The objectives of this Agreement are to:

- 39 • Measure and compare the amount of energy used in the field between baseline hot  
40 water systems and hot water systems that have been retrofit with optimized  
41 distribution systems and high-efficiency equipment.
- 42 • Apply the hot water profile from a field site to a controlled lab environment, where an  
43 array of different configurations can be measured and analyzed.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

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### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- Use results from the lab and field studies to develop an easy-to-use design tool and cost calculator, and to update the current hot water design guide.

### III. TASK 1 PROJECT ADMINISTRATION

#### PRODUCTS

##### Subtask 1.1 Products

The goal of this subtask is to establish the requirements for submitting project products (e.g., reports, summaries, plans, and presentation materials). Unless otherwise specified by the Commission Agreement Manager (CAM), the Recipient must deliver products as required below by the dates listed in the **Project Schedule (Part V)**. Products that require a draft version are indicated by marking “**(draft and final)**” after the product name in the “Products” section of the task/subtask. If “(draft and final)” does not appear after the product name, only a final version of the product is required. With respect to due dates within this Scope of Work, “**days**” means working days.

##### The Recipient shall:

###### For products that require a draft version

- Submit all draft products to the CAM for review and comment in accordance with the Project Schedule (Part V). The CAM will provide written comments to the Recipient on the draft product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- Submit the final product to the CAM once agreement has been reached on the draft. The CAM will provide written approval of the final product within 15 days of receipt, unless otherwise specified in the task/subtask for which the product is required.
- If the CAM determines that the final product does not sufficiently incorporate his/her comments, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

###### For products that require a final version only

- Submit the product to the CAM for approval.
- If the CAM determines that the product requires revision, submit the revised product to the CAM within 10 days of notice by the CAM, unless the CAM specifies a longer time period.

###### For all products

- Submit all data and documents required as products in accordance with the following Instructions for Submitting Electronic Files and Developing Software:

- **Electronic File Format**

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

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### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

1 Submit all data and documents required as products under this Agreement  
2 in an electronic file format that is fully editable and compatible with the  
3 Energy Commission's software and Microsoft (MS)-operating computing  
4 platforms, or with any other format approved by the CAM. Deliver an  
5 electronic copy of the full text of any Agreement data and documents in a  
6 format specified by the CAM, such as memory stick or CD-ROM.  
7

8 The following describes the accepted formats for electronic data and  
9 documents provided to the Energy Commission as products under this  
10 Agreement, and establishes the software versions that will be required to  
11 review and approve all software products:

- 12 • Data sets will be in MS Access or MS Excel file format  
13 (version 2007 or later), or any other format approved by the CAM.
- 14 • Text documents will be in MS Word file format, version 2007 or  
15 later.
- 16 • Documents intended for public distribution will be in PDF file format.  
17 The Recipient must also provide the native Microsoft file format.
- 18 • Project management documents will be in Microsoft Project file  
19 format, version 2007 or later.

- 20
- 21 • **Software Application Development**

22 Use the following standard Application Architecture components in  
23 compatible versions for any software application development required by  
24 this Agreement (e.g., databases, models, modeling tools), unless the CAM  
25 approves other software applications such as open source programs:

- 26 • Microsoft ASP.NET framework (version 3.5 and up). Recommend  
27 4.0.
- 28 • Microsoft Internet Information Services (IIS), (version 6 and up)  
29 Recommend 7.5.
- 30 • Visual Studio.NET (version 2008 and up). Recommend 2010.
- 31 • C# Programming Language with Presentation (UI), Business Object  
32 and Data Layers.
- 33 • SQL (Structured Query Language).
- 34 • Microsoft SQL Server 2008, Stored Procedures. Recommend 2008  
35 R2.
- 36 • Microsoft SQL Reporting Services. Recommend 2008 R2.
- 37 • XML (external interfaces).

38  
39 *Any exceptions to the Electronic File Format requirements above must be*  
40 *approved in writing by the CAM. The CAM will consult with the Energy*  
41 *Commission's Information Technology Services Branch to determine whether the*  
42 *exceptions are allowable.*  
43

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### MEETINGS

##### Subtask 1.2 Kick-off Meeting

The goal of this subtask is to establish the lines of communication and procedures for implementing this Agreement.

##### The Recipient shall:

- Attend a “Kick-off” meeting with the CAM, the Commission Agreement Officer (CAO), and any other Energy Commission staff relevant to the Agreement. The Recipient will bring its Project Manager and any other individuals designated by the CAM to this meeting. The administrative and technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting, the CAM will provide an agenda to all potential meeting participants. The meeting may take place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

The administrative portion of the meeting will include discussion of the following:

- Terms and conditions of the Agreement;
- Administrative products (subtask 1.1);
- CPR meetings (subtask 1.3);
- Match fund documentation (subtask 1.7);
- Permit documentation (subtask 1.8);
- Subcontracts (subtask 1.9); and
- Any other relevant topics.

The technical portion of the meeting will include discussion of the following:

- The CAM's expectations for accomplishing tasks described in the Scope of Work;
  - An updated Project Schedule;
  - Technical products (subtask 1.1);
  - Progress reports and invoices (subtask 1.5);
  - Final Report (subtask 1.6);
  - Technical Advisory Committee meetings (subtasks 1.10 and 1.11); and
  - Any other relevant topics.
- Provide an *Updated Project Schedule, List of Match Funds, and List of Permits*, as needed to reflect any changes in the documents.

##### The CAM shall:

- Designate the date and location of the meeting.
- Send the Recipient a *Kick-off Meeting Agenda*.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### 1 **Recipient Products:**

- 2 • Updated Project Schedule (*if applicable*)
- 3 • Updated List of Match Funds (*if applicable*)
- 4 • Updated List of Permits (*if applicable*)

#### 5 **CAM Product:**

- 6 • Kick-off Meeting Agenda

#### 7 **Subtask 1.3 Critical Project Review (CPR) Meetings**

8  
9  
10 The goal of this subtask is to determine if the project should continue to receive Energy  
11 Commission funding, and if so whether any modifications must be made to the tasks,  
12 products, schedule, or budget. CPR meetings provide the opportunity for frank  
13 discussions between the Energy Commission and the Recipient. As determined by the  
14 CAM, discussions may include project status, challenges, successes, advisory group  
15 findings and recommendations, final report preparation, and progress on technical  
16 transfer and production readiness activities (if applicable). Participants will include the  
17 CAM and the Recipient, and may include the CAO and any other individuals selected by  
18 the CAM to provide support to the Energy Commission.

19  
20 CPR meetings generally take place at key, predetermined points in the Agreement, as  
21 determined by the CAM and as shown in the Task List on page 1 of this Exhibit.  
22 However, the CAM may schedule additional CPR meetings as necessary. The budget  
23 will be reallocated to cover the additional costs borne by the Recipient, but the overall  
24 Agreement amount will not increase. CPR meetings generally take place at the Energy  
25 Commission, but they may take place at another location, or may be conducted via  
26 electronic conferencing (e.g., WebEx) as determined by the CAM.  
27

#### 28 **The Recipient shall:**

- 29 • Prepare a *CPR Report* for each CPR meeting that: (1) discusses the progress of  
30 the Agreement toward achieving its goals and objectives; and (2) includes  
31 recommendations and conclusions regarding continued work on the project.
- 32 • Submit the CPR Report along with any other *Task Products* that correspond to  
33 the technical task for which the CPR meeting is required (i.e., if a CPR meeting is  
34 required for Task 2, submit the Task 2 products along with the CPR Report).
- 35 • Attend the CPR meeting.
- 36 • Present the CPR Report and any other required information at each CPR  
37 meeting.

#### 38 **The CAM shall:**

- 39 • Determine the location, date, and time of each CPR meeting with the Recipient's  
40 input.  
41

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- 1 • Send the Recipient a *CPR Agenda* and a *List of Expected CPR Participants* in  
2 advance of the CPR meeting. If applicable, the agenda will include a discussion  
3 of match funding and permits.
- 4 • Conduct and make a record of each CPR meeting. Provide the Recipient with a  
5 *Schedule for Providing a Progress Determination* on continuation of the project.
- 6 • Determine whether to continue the project, and if so whether modifications are  
7 needed to the tasks, schedule, products, or budget for the remainder of the  
8 Agreement. If the CAM concludes that satisfactory progress is not being made,  
9 this conclusion will be referred to the Deputy Director of the Energy Research  
10 and Development Division.
- 11 • Provide the Recipient with a *Progress Determination* on continuation of the  
12 project, in accordance with the schedule. The Progress Determination may  
13 include a requirement that the Recipient revise one or more products.

#### 14 15 **Recipient Products:**

- 16 • CPR Report(s)
- 17 • Task Products (draft and/or final as specified in the task)

#### 18 19 **CAM Products:**

- 20 • CPR Agenda
- 21 • List of Expected CPR Participants
- 22 • Schedule for Providing a Progress Determination
- 23 • Progress Determination

#### 24 25 **Subtask 1.4 Final Meeting**

26 The goal of this subtask is to complete the closeout of this Agreement.

#### 27 28 **The Recipient shall:**

- 29 • Meet with Energy Commission staff to present project findings, conclusions, and  
30 recommendations. The final meeting must be completed during the closeout of this  
31 Agreement. This meeting will be attended by the Recipient and CAM, at a  
32 minimum. The meeting may occur in person or by electronic conferencing (e.g.,  
33 WebEx), with approval of the CAM.

34  
35 The technical and administrative aspects of Agreement closeout will be  
36 discussed at the meeting, which may be divided into two separate meetings at  
37 the CAM's discretion.

- 38 • The technical portion of the meeting will involve the presentation of findings,  
39 conclusions, and recommended next steps (if any) for the Agreement. The  
40 CAM will determine the appropriate meeting participants.
- 41 • The administrative portion of the meeting will involve a discussion with the  
42 CAM and the CAO of the following Agreement closeout items:
  - 43 • Disposition of any state-owned equipment.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- Need to file a Uniform Commercial Code Financing Statement (Form UCC-1) regarding the Energy Commission's interest in patented technology.
- The Energy Commission's request for specific "generated" data (not already provided in Agreement products).
- Need to document the Recipient's disclosure of "subject inventions" developed under the Agreement.
- "Surviving" Agreement provisions such as repayment provisions and confidential products.
- Final invoicing and release of retention.

- Prepare a *Final Meeting Agreement Summary* that documents any agreement made between the Recipient and Commission staff during the meeting.
- Prepare a *Schedule for Completing Agreement Closeout Activities*.
- Provide *All Draft and Final Written Products* on a CD-ROM or USB memory stick, organized by the tasks in the Agreement.

#### Products:

- Final Meeting Agreement Summary (*if applicable*)
- Schedule for Completing Agreement Closeout Activities
- All Draft and Final Written Products

## REPORTS AND INVOICES

### Subtask 1.5 Progress Reports and Invoices

The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement; and (2) ensure that invoices contain all required information and are submitted in the appropriate format.

#### The Recipient shall:

- Submit a monthly *Progress Report* to the CAM. Each progress report must:
  - Summarize all Agreement activities conducted by the Recipient for the preceding month, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. See the Progress Report Format Attachment for the recommended specifications.
  - Provide a synopsis of the project progress, including accomplishments, problems, milestones, products, schedule, fiscal status, and any evidence of progress such as photographs.
- Submit a monthly or quarterly *Invoice* that follows the instructions in the terms and conditions. In addition, each invoice must document and verify:
  - Energy Commission funds received by California-based entities;

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- Energy Commission funds spent in California (*if applicable*); and
- Match fund expenditures.

#### Products:

- Progress Reports
- Invoices

#### Subtask 1.6 Final Report

The goal of this subtask is to prepare a comprehensive Final Report that describes the original purpose, approach, results, and conclusions of the work performed under this Agreement. The CAM will review and approve the Final Report, which will be due at least **two months** before the Agreement end date. When creating the Final Report Outline and the Final Report, the Recipient must use a Style Manual provided by the CAM.

#### Subtask 1.6.1 Final Report Outline

##### The Recipient shall:

- Prepare a *Final Report Outline* in accordance with the *Style Manual* provided by the CAM.
- Submit a draft of the outline to the CAM for review and comment.
- Once agreement has been reached on the draft, submit the final outline to the CAM. The CAM will provide written approval of the final outline within 10 days of receipt.

##### Recipient Products:

- Final Report Outline (draft and final)

##### CAM Product:

- Style Manual

#### Subtask 1.6.2 Final Report

##### The Recipient shall:

- Prepare a *Final Report* for this Agreement in accordance with the approved Final Report Outline and the *Style Manual* provided by the CAM.
- Submit a draft of the report to the CAM for review and comment. Once agreement on the draft report has been reached, the CAM will forward the electronic version for Energy Commission internal approval. Once the CAM receives approval, he/she will provide written approval to the Recipient.
- Submit one bound copy of the Final Report to the CAM.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

1 **Products:**

- 2 • Final Report (draft and final)
- 3

4 **MATCH FUNDS, PERMITS, AND SUBCONTRACTS**

5

6 **Subtask 1.7 Match Funds**

7 The goal of this subtask is to ensure that the Recipient obtains any match funds  
8 planned for this Agreement and applies them to the Agreement during the Agreement  
9 term.

10  
11 While the costs to obtain and document match funds are not reimbursable under this  
12 Agreement, the Recipient may spend match funds for this task. The Recipient may only  
13 spend match funds during the Agreement term, either concurrently or prior to the use of  
14 Energy Commission funds. Match funds must be identified in writing, and the Recipient  
15 must obtain any associated commitments before incurring any costs for which the  
16 Recipient will request reimbursement.

17  
18 **The Recipient shall:**

- 19 • Prepare a *Match Funds Status Letter* that documents the match funds committed  
20 to this Agreement. If no match funds were part of the proposal that led to the  
21 Energy Commission awarding this Agreement and none have been identified at  
22 the time this Agreement starts, then state this in the letter.

23  
24 If match funds were a part of the proposal that led to the Energy Commission  
25 awarding this Agreement, then provide in the letter:

- 26 • A list of the match funds that identifies:
- 27 • The amount of cash match funds, their source(s) (including a contact  
28 name, address, and telephone number), and the task(s) to which the  
29 match funds will be applied.
- 30 • The amount of each in-kind contribution, a description of the  
31 contribution type (e.g., property, services), the documented market or  
32 book value, the source (including a contact name, address, and  
33 telephone number), and the task(s) to which the match funds will be  
34 applied. If the in-kind contribution is equipment or other tangible or real  
35 property, the Recipient must identify its owner and provide a contact  
36 name, address, telephone number, and the address where the  
37 property is located.
- 38 • A copy of a letter of commitment from an authorized representative of  
39 each source of match funding that the funds or contributions have been  
40 secured.
- 41 • At the Kick-off meeting, discuss match funds and the impact on the project if they  
42 are significantly reduced or not obtained as committed. If applicable, match funds

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### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

1 will be included as a line item in the progress reports and will be a topic at CPR  
2 meetings.

- 3 • Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of  
4 additional match funds.
- 5 • Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match  
6 funds are reduced during the course of the Agreement. Reduction of match funds  
7 may trigger a CPR meeting.

#### 9 **Products:**

- 10 • Match Funds Status Letter
- 11 • Supplemental Match Funds Notification Letter (*if applicable*)
- 12 • Match Funds Reduction Notification Letter (*if applicable*)

#### 14 **Subtask 1.8 Permits**

15 The goal of this subtask is to obtain all permits required for work completed under this  
16 Agreement in advance of the date they are needed to keep the Agreement schedule on  
17 track. Permit costs and the expenses associated with obtaining permits are  
18 reimbursable under this Agreement. Permits must be identified and obtained before the  
19 Recipient may incur any costs related to the use of the permit(s) for which the Recipient  
20 will request reimbursement.

#### 21 **The Recipient shall:**

- 22 • Prepare a *Permit Status Letter* that documents the permits required to conduct  
23 this Agreement. If no permits are required at the start of this Agreement, then  
24 state this in the letter. If permits will be required during the course of the  
25 Agreement, provide in the letter:
  - 26 • A list of the permits that identifies: (1) the type of permit; and (2) the  
27 name, address, and telephone number of the permitting jurisdictions or  
28 lead agencies.
  - 29 • The schedule the Recipient will follow in applying for and obtaining the  
30 permits.

31  
32 The list of permits and the schedule for obtaining them will be discussed at the  
33 Kick-off meeting (subtask 1.2), and a timetable for submitting the updated list,  
34 schedule, and copies of the permits will be developed. The impact on the project  
35 if the permits are not obtained in a timely fashion or are denied will also be  
36 discussed. If applicable, permits will be included as a line item in progress  
37 reports and will be a topic at CPR meetings.

- 38 • If during the course of the Agreement additional permits become necessary, then  
39 provide the CAM with an *Updated List of Permits* (including the appropriate  
40 information on each permit) and an *Updated Schedule for Acquiring Permits*.
- 41 • Send the CAM a *Copy of Each Approved Permit*.

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## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- 1       • If during the course of the Agreement permits are not obtained on time or are  
2       denied, notify the CAM within 5 days. Either of these events may trigger a CPR  
3       meeting.  
4

#### 5 **Products:**

- 6       • Permit Status Letter  
7       • Updated List of Permits (*if applicable*)  
8       • Updated Schedule for Acquiring Permits (*if applicable*)  
9       • Copy of each Approved Permit (*if applicable*)  
10

#### 11 **Subtask 1.9 Subcontracts**

12 The goals of this subtask are to: (1) procure subcontracts required to carry out the tasks  
13 under this Agreement; and (2) ensure that the subcontracts are consistent with the  
14 terms and conditions of this Agreement.  
15

#### 16 **The Recipient shall:**

- 17       • Manage and coordinate subcontractor activities in accordance with the  
18       requirements of this Agreement.  
19       • Incorporate this Agreement by reference into each subcontract.  
20       • Include any required Energy Commission flow-down provisions in each  
21       subcontract, in addition to a statement that the terms of this Agreement will  
22       prevail if they conflict with the subcontract terms.  
23       • If required by the CAM, submit a draft of each *Subcontract* required to conduct  
24       the work under this Agreement.  
25       • Submit a final copy of the executed subcontract.  
26       • Notify and receive written approval from the CAM prior to adding any new  
27       subcontractors (see the discussion of subcontractor additions in the terms and  
28       conditions).  
29

#### 30 **Products:**

- 31       • Subcontracts (*draft if required by the CAM*)  
32

### 33 **TECHNICAL ADVISORY COMMITTEE**

#### 34 **Subtask 1.10 Technical Advisory Committee (TAC)**

35 The goal of this subtask is to create an advisory committee for this Agreement. The  
36 TAC should be composed of diverse professionals. The composition will vary depending  
37 on interest, availability, and need. TAC members will serve at the CAM's discretion.  
38 The purpose of the TAC is to:  
39

- 40       • Provide guidance in research direction. The guidance may include research  
41       scope and methodologies, timing, and coordination with other research. The  
42       guidance may be based on:  
43       • Technical area expertise;

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- 1 • Knowledge of market applications; or
- 2 • Linkages between the agreement work and other past, present, or future
- 3 research (both public and private sectors) that TAC members are aware of in
- 4 a particular area.
- 5 • Review products and provide recommendations for needed product adjustments,
- 6 refinements, or enhancements.
- 7 • Evaluate the tangible benefits of project research to the state of California, and
- 8 provide recommendations as needed to enhance the benefits.
- 9 • Provide recommendations regarding information dissemination, market
- 10 pathways, or commercialization strategies relevant to the research products.

11  
12 The TAC may be composed of qualified professionals spanning the following types of  
13 disciplines:

- 14 • Researchers knowledgeable about the project subject matter;
- 15 • Members of trades that will apply the results of the project (e.g., designers,
- 16 engineers, architects, contractors, and trade representatives);
- 17 • Public interest market transformation implementers;
- 18 • Product developers relevant to the project;
- 19 • U.S. Department of Energy research managers, or experts from other federal or
- 20 state agencies relevant to the project;
- 21 • Public interest environmental groups;
- 22 • Utility representatives;
- 23 • Air district staff; and
- 24 • Members of relevant technical society committees.

#### 25 26 **The Recipient shall:**

- 27 • Prepare a *List of Potential TAC Members* that includes the names, companies,
- 28 physical and electronic addresses, and phone numbers of potential members.
- 29 The list will be discussed at the Kick-off meeting, and a schedule for recruiting
- 30 members and holding the first TAC meeting will be developed.
- 31 • Recruit TAC members. Ensure that each individual understands member
- 32 obligations and the TAC meeting schedule developed in subtask 1.11.
- 33 • Prepare a *List of TAC Members* once all TAC members have committed to
- 34 serving on the TAC.
- 35 • Submit *Documentation of TAC Member Commitment* (such as Letters of
- 36 Acceptance) from each TAC member.

#### 37 **Products:**

- 38 • List of Potential TAC Members
- 39 • List of TAC Members
- 40 • Documentation of TAC Member Commitment

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## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### 1 **Subtask 1.11 TAC Meetings**

2 The goal of this subtask is for the TAC to provide strategic guidance for the project by  
3 participating in regular meetings, which may be held via teleconference.  
4

#### 5 **The Recipient shall:**

- 6 • Discuss the TAC meeting schedule with the CAM at the Kick-off meeting.  
7 Determine the number and location of meetings (in-person and via  
8 teleconference) in consultation with the CAM.
- 9 • Prepare a *TAC Meeting Schedule* that will be presented to the TAC members  
10 during recruiting. Revise the schedule after the first TAC meeting to incorporate  
11 meeting comments.
- 12 • Prepare a *TAC Meeting Agenda* and *TAC Meeting Back-up Materials* for each  
13 TAC meeting.
- 14 • Organize and lead TAC meetings in accordance with the TAC Meeting Schedule.  
15 Changes to the schedule must be pre-approved in writing by the CAM.
- 16 • Prepare *TAC Meeting Summaries* that include any recommended resolutions of  
17 major TAC issues.  
18

#### 19 **Products:**

- 20 • TAC Meeting Schedule (draft and final)
- 21 • TAC Meeting Agendas (draft and final)
- 22 • TAC Meeting Back-up Materials
- 23 • TAC Meeting Summaries  
24

#### 25 **IV. TECHNICAL TASKS**

26  
27 *Products that require a draft version are indicated by marking “(draft and final)” after*  
28 *the product name in the “Products” section of the task/subtask. If “(draft and final)” does*  
29 *not appear after the product name, only a final version of the product is required.*

30 **Subtask 1.1 (Products)** describes the procedure for submitting products to the CAM.  
31

#### 32 **TASK 2 Contract Execution**

33 The goals of this task are to: (1) confirm the availability of the project demonstration site  
34 and a measurement and verification (M&V) contractor; and (2) execute any agreements  
35 necessary to secure the demonstration site and M&V contractor.  
36

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### 1 **Subtask 2.1 Execute a Contract with the Selected Demonstration Site(s)**

##### 2 3 **The Recipient shall:**

- 4 • Reach agreement with the manager(s) of the selected demonstration sites  
5 regarding the project timeline, space reserved for the project, equipment  
6 installation, permit and insurance requirements, indemnity, and the  
7 Recipient's use of any removal or support staff.
- 8 • If the selected demonstration sites becomes unavailable during the project  
9 term, work with the CAM to select a new site.
- 10 • Execute a *Contract with the Demonstration Sites* that confirms the  
11 agreement reached above on the Recipient's use of the site.

##### 12 13 **Products:**

- 14 • Executed Contract with the Demonstration Sites

#### 15 16 **Subtask 2.2 Execute a Contract with the Selected M&V Contractor**

##### 17 18 **The Recipient shall:**

- 19 • Confirm the selected M&V contractor's ability to provide required  
20 hardware, software, and staff to conduct the required measurements  
21 during the project term.
- 22 • Confirm that the selected M&V contractor will follow utility M&V protocols,  
23 and will prepare a detailed analytical report that verifies energy  
24 consumption and engineering calculations for energy and cost savings.
- 25 • If the selected M&V contractor becomes unavailable during the project  
26 term, the Recipient shall work with the CAM to select a new M&V  
27 contractor.
- 28 • Execute a *Contract with the M&V Contractor* that secures the contractor's  
29 services during the project term and confirms that the contractor will follow  
30 M&V protocol and prepare the detailed analytical report.

##### 31 32 **Products:**

- 33 • Executed Contract with the M&V Contractor

#### 34 35 36 **TASK 3 Field Demonstration of Baseline Hot Water System**

37 The goal of this task is to conduct demonstrations at three CFS locations, measure the  
38 baseline system energy and water use at the heater and each point of use through  
39 monitoring and calculate system delivery efficiency and hot water delivery performance.  
40

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### 1 **The Recipient shall for each site:**

- 2 • Define third-party M&V procedures, to be conducted by M&V subcontractor in a  
3 draft and final *M&V Plan*.
- 4 • Develop a *Field Test Plan*. Describe the objectives of the field test. After  
5 conducting a full hot water system audit of each site, describe each site and  
6 locations where the equipment will be monitored. Describe monitoring  
7 instrumentation used, monitoring points, instrument installation, and monitoring  
8 procedures and monitoring duration. Develop a field calibration test plan for  
9 commissioning field instrumentation after installation.
- 10 • Specify, procure, and bench test monitoring equipment and instrumentation.  
11 Calibrate equipment in the laboratory, including water and gas meters and other  
12 instrumentation or sensors.
- 13 • Install monitoring instrumentation on baseline systems. Establish installation  
14 dates and times and coordinate installations. Install monitoring instrumentation at  
15 points designated in the test plan.
- 16 • Commission data acquisition systems and calibrate all instrumentation.
- 17 • Monitor the baseline hot water system for energy and water use, system  
18 efficiency, and hot water delivery performance. Monitor baseline systems at two  
19 CFS locations, one in Pacific Gas and Electric territory, one in Southern  
20 California Gas Company territory, for a period of four weeks at each site.
- 21 • Perform analysis of baseline results. Adjust design of optimized system,  
22 monitoring equipment, or instrumentation as necessary.
- 23 • Prepare *Critical Project Review (CPR) Report #1*, based on baseline hot water  
24 system results in PG&E and Southern California Gas Company territories  
25 Participate in a CPR meeting to present these findings.
- 26 • Prepare a *Baseline Hot Water System Field Test Report* that incorporates the  
27 results of the bench test and calibration of the monitoring equipment, the  
28 installation of the monitoring instrumentation, the commissioning of the data  
29 acquisition system, a description of each site, baseline results, and baseline data  
30 analysis and assessment.

#### 31 **Products:**

- 32 • Field Test Plan
- 33 • CPR Report #1
- 34 • Baseline Hot Water System Field Test Report (draft and final)
- 35 • M&V Plan (draft and final)

#### 36 **TASK 4 Field Demonstration of Optimized Hot Water System**

37  
38  
39 The goal of this task is to identify efficient hot water system designs and equipment at  
40 the same two CFS locations, install optimized system, measure energy and water use  
41 through monitoring, conduct demonstrations, develop 24-hour flow rate profiles for  
42 testing in a lab environment, and to begin to disseminate results.  
43

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

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#### The Recipient shall for each site:

- Install optimized system and monitoring equipment. Uninstall certain monitoring instrumentation prior to installation of optimized system. Establish equipment delivery and installation dates and times and coordinate with contractors to install optimized systems. Install remaining instrumentation; calibrate and commission system and monitoring equipment.
- Monitor optimized systems for energy and water use, system efficiency, and hot water delivery performance for a period of four weeks. Analyze data to verify results. Remove monitoring equipment after accuracy is verified.
- Analyze and summarize results for baseline and optimized system. Use results to start developing information dissemination materials. Develop typical daily hot water flow profiles for the baseline and optimized system for the PG&E Applied Technology Services Laboratory. Prepare *Datasheet for the Baseline and Optimized Daily Flow Rate Test Profiles*.
- Prepare an *Optimized Hot Water System Field Test Report* that incorporates baseline and optimization system results and data analysis, economic feasibility analysis and conclusions. The datasheets of baseline and optimized daily flow rate test profiles will be included as an appendix to the report.

#### Product:

- Datasheet of baseline and optimized daily flow rate test profiles
- Optimized Hot Water System Field Test Report (draft and final)

#### TASK 5 Lab Testing and Demonstration of Optimized Hot Water System and Design Tool Development

The goal of this task is to support and validate the field demonstration projects by building one of the systems monitored in the field in a laboratory environment to validate the system's pre- and post-retrofit performance. Numerous distribution system design and operating strategies paired with various standard and high efficiency heaters successively to show the impact on the overall system performance.

#### The Recipient shall:

- Develop a *Laboratory Test Plan for the baseline and optimized system* including:
  - Description of objectives.
  - Description of lab conditions where equipment will be monitored.
  - Description of the monitoring instrumentation used and monitoring points.
  - Description of the monitoring procedure and duration.
  - Discussion of network connections between instrumentation and data acquisition system.
- Test baseline and optimized hot water system in the lab, including:
  - Designing a baseline and optimized hot water system.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- 1           ○ Installing a baseline and optimized system and instrumentation in the lab.
- 2           ○ Processing daily flow rate data and programming lab test software.
- 3           ○ Calibrating and validating baseline and optimized system test layouts.
- 4           ○ Applying daily water use profiles to test various system configurations
- 5           identified in the test matrix covering an array of optimization measures.
- 6       • Prepare *CPR Report #2* after lab testing has been completed; Participate in a
- 7       CPR meeting to present these findings.
- 8       • Incorporate test results, observations, economic feasibility analysis and
- 9       conclusions from this task into a *Baseline and Optimized Hot Water System Lab*
- 10       *Test Report*.
- 11           ○ Use results to start developing information dissemination materials.
- 12       • Develop a *synopsis of previous research and results from Task 3-5* that would
- 13       support algorithm development and construction of a design tool and calculator.
- 14           ○ Characterize the domestic hot water systems of major CFS segments
- 15           (e.g., quick-service restaurant, full-service restaurant, coffee shop,
- 16           sandwich shop, bar, cafeteria, supermarket, gas station, corner market).
- 17       • Build online-based Hot Water System Design Tool and Savings Calculator for
- 18       each segment including default system design and equipment and design
- 19       optimization options including menu options for selecting preheating, water
- 20       heater, distribution system, dishwasher, spray valve, and hand sink aerators.
- 21           ○ Prepare a *learning objectives of the design tool and calculator* including
- 22           water heater type selection, heater sizing process, heater efficiency,
- 23           distribution system heat loss, system efficiency, hot water use, hot water
- 24           delivery performance, purchase, installation, operating, life cycle cost
- 25           comparison, preheating, and retro-commissioning measure comparison.
- 26           ○ Work with IT team to host design tool and calculator on FSTC website and
- 27           develop information bubbles that describe each measure selection.
- 28       • Prepare *M&V Report* to document post retrofit energy savings and other benefits.
- 29

#### Product:

- 31       • Laboratory Test Plan
- 32       • CPR Report #2
- 33       • Baseline and Optimized Hot Water System Lab Test Report (draft and final)
- 34       • Synopsis of research results from Task 3 to Task 5.
- 35       • Learning Objectives of the Design Tool and calculator
- 36       • Hot Water System Design Tool and Savings Calculator (webpage)
- 37       • M&V Report (draft and final)
- 38
- 39

#### TASK 6 Evaluation of Project Benefits

40 The goal of this task is to report the benefits resulting from this project.

41

42

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

#### 1 The Recipient shall:

- 2 • Complete three Project Benefits Questionnaires that correspond to three main
- 3 intervals in the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-*
- 4 *term Benefits Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- 5 • Provide all key assumptions used to estimate projected benefits, including
- 6 targeted market sector (e.g., population and geographic location), projected
- 7 market penetration, baseline and projected energy use and cost, operating
- 8 conditions, and emission reduction calculations. Examples of information that
- 9 may be requested in the questionnaires include:
- 10
- 11 ○ For Product Development Projects and Project Demonstrations:
- 12 • Published documents, including date, title, and periodical name.
- 13 • Estimated or actual energy and cost savings, and estimated statewide
- 14 energy savings once market potential has been realized. Identify all
- 15 assumptions used in the estimates.
- 16 • Greenhouse gas and criteria emissions reductions.
- 17 • Other non-energy benefits such as reliability, public safety, lower
- 18 operational cost, environmental improvement, indoor environmental
- 19 quality, and societal benefits.
- 20 • Data on potential job creation, market potential, economic development,
- 21 and increased state revenue as a result of the project.
- 22 • A discussion of research product downloads from websites, and
- 23 publications in technical journals.
- 24 • A comparison of project expectations and performance. Discuss whether
- 25 the goals and objectives of the Agreement have been met and what
- 26 improvements are needed, if any.
- 27 • Additional Information for Product Development Projects:
- 28 • Outcome of product development efforts, such copyrights and
- 29 license agreements.
- 30 • Units sold or projected to be sold in California and outside of
- 31 California.
- 32 • Total annual sales or projected annual sales (in dollars) of products
- 33 developed under the Agreement.
- 34 • Investment dollars/follow-on private funding as a result of Energy
- 35 Commission funding.
- 36 • Patent numbers and applications, along with dates and brief
- 37 descriptions.
- 38 • Additional Information for Product Demonstrations:
- 39 • Outcome of demonstrations and status of technology.
- 40 • Number of similar installations.
- 41 • Jobs created/retained as a result of the Agreement.
- 42

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

1       ○ For Information/Tools and Other Research Studies:

- 2           • Outcome of research.
- 3           • Published documents, including date, title, and periodical name.
- 4           • A discussion of policy development. State if the research has been cited in
- 5           government policy publications or technical journals, or has been used to
- 6           inform regulatory bodies.
- 7           • The number of website downloads.
- 8           • An estimate of how the information and research have affected energy
- 9           use and cost, or have resulted in other non-energy benefits.
- 10          • An estimate of energy and non-energy benefits.
- 11          • Data on potential job creation, market potential, economic development,
- 12          and increased state revenue as a result of research.
- 13          • A discussion of research product downloads from websites, and
- 14          publications in technical journals.
- 15          • A comparison of project expectations and performance. Discuss whether
- 16          the goals and objectives of the Agreement have been met and what
- 17          improvements are needed, if any.
- 18          • Respond to CAM questions regarding responses to the questionnaires.
- 19

20        *The Energy Commission may send the Recipient similar questionnaires after the*

21        *Agreement term ends. Responses to these questionnaires will be voluntary.*

22

#### 23       **Products:**

- 24           • Kick-off Meeting Benefits Questionnaire
- 25           • Mid-term Benefits Questionnaire
- 26           • Final Meeting Benefits Questionnaire
- 27

#### 28

#### 29       **TASK 7 Technology/Knowledge Transfer Activities**

30

31        The goal of this task is to develop a plan to make the knowledge gained, experimental

32        results, and lessons learned available to the public and key decision makers.

33

#### 34       **The Recipient shall:**

- 35           • Prepare an *Initial Fact Sheet* at start of the project that describes the project
- 36           research. Use the format provided by the CAM.
- 37           • Prepare a *Final Project Fact Sheet* at the project's conclusion that discusses
- 38           research results. Use the format provided by the CAM.
- 39           • Prepare a *Technology/Knowledge Transfer Plan* that includes:
- 40            • An explanation of how the knowledge gained from the project will be made
- 41            available to the public, including the targeted market sector and potential
- 42            outreach to end users, utilities, regulatory agencies, and others.

# ENERGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION GRANTS

## Exhibit A

### SCOPE OF WORK

[PON-13-503-4, Fisher-Nickel, Inc]

- 1 • A description of the intended use(s) for and users of the project results.
- 2 • Published documents, including date, title, and periodical name.
- 3 • Copies of documents, fact sheets, journal articles, press releases, and other
- 4 documents prepared for public dissemination. These documents must include
- 5 the Legal Notice required in the terms and conditions. Indicate where and
- 6 when the documents were disseminated.
- 7 • A discussion of policy development. State if research has been or will be cited
- 8 in government policy publications, or used to inform regulatory bodies.
- 9 • The number of website downloads or public requests for research results.
- 10 • Additional areas as determined by the CAM.
- 11 • Conduct technology transfer activities in accordance with the
- 12 Technology/Knowledge Transfer Plan to highlight the demonstration project
- 13 results, findings, and conclusions, and to accelerate the market adoption of
- 14 optimized hot water systems. Activities will include two *Seminars*, a *Webcast*, as
- 15 well as two operator-focused *Case Studies Reports*, including two poster boards
- 16 of these reports. Report on these activities in Progress Reports.
- 17 • Prepare a *Technology/Knowledge Transfer Report* on technology transfer
- 18 activities conducted during the project.
- 19 • Prepare an *Update to 2010 Commercial Kitchen Hot Water System Design*
- 20 *Guide* based on updates since last publication and findings from this project.
- 21 • Develop a *Design Guide: Commercial Kitchen Hot Water System Design*
- 22 *Examples*, which will be based on findings from the two field demonstrations.

#### Products:

- 25 • Initial Fact Sheet (draft and final)
- 26 • Final Project Fact Sheet (draft and final)
- 27 • Technology/Knowledge Transfer Plan (draft and final)
- 28 • Technology/Knowledge Transfer Report (draft and final)
- 29 • Case Studies Reports
- 30 • Update to 2010 Commercial Kitchen Hot Water System Design Guide
- 31 • Design Guide: Commercial Kitchen Hot Water System Design Examples

#### V. PROJECT SCHEDULE

36 Please see the attached Excel spreadsheet.

RESOLUTION NO:

STATE OF CALIFORNIA

STATE ENERGY RESOURCES  
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: FISHER-NICKEL, INC.

**RESOLVED**, that the State Energy Resources Conservation and Development Commission (Energy Commission) adopts the staff CEQA findings contained in the Agreement Request Form; and

**RESOLVED**, that the Energy Commission approves Agreement PIR-14-006 with **Fisher-Nickel, Inc.** for a \$889,036 grant to quantify water and energy use, water heater operating efficiency and system delivery efficiency of baseline and optimized hot water system; and

**FURTHER BE IT RESOLVED**, that the Executive Director or his/her designee shall execute the same on behalf of the Energy Commission.

**CERTIFICATION**

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the California Energy Commission held on September 10, 2014.

AYE: [List of Commissioners]

NAY: [List of Commissioners]

ABSENT: [List of Commissioners]

ABSTAIN: [List of Commissioners]

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Harriet Kallemeyn,  
Secretariat