EWG 01/2009T

Reducing barriers to trade through development of a common protocol for measuring the seasonal energy efficiency (SEER) of air conditioners

Objective of the project

The objective of this project aims to develop an analytical platform to evaluate the SEER values for room air conditioners (RACs). Through developing a computer code, based on the data of climate and building load characteristic collected from APEC economies, it tries to provide a common protocol for SEER calculation. By promoting the use of this program, it hope helping to reduce not only the unnecessary duplicate test and administration process, but also the cost and times of testing, and further affect the efficiency of trading among APEC economies.

Budget

The total approved budget for this study is US$60,000 from APEC funding. The consultant will prepare an itemized budget (up to US$41,200) and submit this with the proposal. This budget must include:

- Consulting fees, including researcher fees;
- Short-term clerical and secretarial staff remuneration
- Consultant's secretary cost and other administrative costs associated with the project.

Scope of Work

1. Collect the weather data and the building load curve of the regions concerned.
2. Develop a common code for performing Seasonal Energy Efficiency Ratio (SEER) of small air conditioners.
3. Design and deliver one and a half days open workshop at Chinese Taipei on topic of air conditioning SEER to those experts or representatives mainly from APEC economies.
4. Publish (consistent with APEC publication policy) and distribute 3 electronic copies of the outcome of workshop to workshop participants and others APEC Economies member.
5. Provide an electronic copy of the above publications and the outcome of the development of SEER program to the APEC Secretariat for dissemination via the APEC Website.

Timetable & Deliverables for tenders

The proposed timetable for the completion of each stage of the project is as follows□

Activities	Dates
Deadline for submission of proposals to the Project Overseer;	**30 April 2009**
Proposal evaluation and bid selection by Steering Committee of representatives from APEC Member Economies;	1-6 May 2009
Negotiation of contract details between the APEC Secretariat and the successful tender;	7-15 May 2009
Organization of workshop and invitation of speakers sent	17 July 2009

Stage 1 • Planning overall SEER development structure • Collection of information of related APEC economies weather data, consumer's behavior of using air conditioner, building load characteristic and the existing regulation and standards	10 July 2009
Finalized the details of workshop and complete lists of experts and participants	28 August 2009
Stage 2 • Completion initial version of SEER program	25 September 2009
Execution of Workshop;	7-8 October 2009
Publish and distribute the outcome of workshop to participants and others APEC Economies member.	23 October 2009
Stage 3 • Complete the final version of SEER program with verified result	20 November 2009
Collection result of workshop, SEER testing method and program	4 December 2009
Produce an electronic version of the above document for dissemination via the relevant APEC Websites.	11 December 2009

Progress

Complete set up the Steering Committee, planning of timetable and Request for Proposal (RFP). Currently in the progress of seeking for contractor, the contract between APEC secretariat and contractor is expected to be complete at the end of April.
Proposals should be submitted to project overseer before Closing Time and Date: 5:00pm, Thursday, 30th April 2009 (Singapore Time).
The RFP information had been posted on 8 April 2009 on APEC website.

Key parameters for SEER calculation

1. Air conditioner testing requirement, cooling capacity and consumer's behavior□According to the standards and specification of various regions.
2. Degradation Coefficient (C_D) □ When the air conditioner is in on-off cycle state, the degradation coefficient is needed to be included in calculating the consuming power.

   The United States proposed to use $C_D = 0.2$□Japan, China, and Chinese Taipei proposed to use $C_D = 0.25$.
3. Building load curve (BL)□Usually is a straight line, and the outdoor temperature is as the horizontal axis. The intersection between air conditioner's cooling capacity and building load curve can be used to decide the operation mode of the air conditioner, i.e. on-off cycle state, continuous operation mode or variable speed operation mode.

Standards	Unites States	Japan	China	Chinese Taipei
	ASHARE 116-1995	JRA 4046□2004 JIS C 9612□2005	GB/T 7725-2004 Appendix E	CNS 14464
Definition Method	BL(65□)=0 BL(95□)=Cooling capacity □1.1	BL(23□)=0 BL(33□)=Cooling Capacity	BL(23□)=0 BL(35□)=Cooling Capacity	BL(23□)=0 BL(33□)=Cooling Capacity

4. Meteorological statistics□Data of the whole year's average outdoor temperature of the region.

Matters that need the cooperation from APEC economies

1. At present, Chinese Taipei already sorted out the air conditioning testing standards for SEER and meteorological statistics of Unites States, Japan and China. It is necessary to get the cooperation from other APEC economies to provide their respective country's air conditioning testing standards and meteorological statistics.

   If there are no standards of the relevant test available, Economies please provide the recommended Degradation Coefficient (C_D) value and the proposed definition of Building load curve's (BL).

   The proposed format example of related information is as follows□

Economies Member	Chinese Taipei
Contact (email)	HsiaoChiHsu@itri.org.tw
Degradation Coefficient (C_D)□	0.25
Building load curve (BL)□	Outdoor Temperature (^oC)
BL = 0	23
BL = Cooling Capacity	33

   Meteorological statistics (for a whole year)□

Economies Member		Chinese Taipei	
Contact (email)		HsiaoChiHsu@itri.org.tw	
Outdoor Temperature (^oC)	Time (hour)	Outdoor Temperature(^oC)	Time (hour)
21	0	31	326
22	0	32	233
23	0	33	112
24	587	34	37
25	700	35	12
26	760	36	4

27	723	37	1
28	650	38	0
29	548	39	0
30	414	40	0

2. A Workshop is planning and will be held on Oct. 7-8 in conjunction with 34th EGEE&C in Taipei. The agenda of the workshop is as follows□

Workshop for the Development of SEER

First day – Seminar (7th Oct., 2009 / Wed.)			
Time	Topic	Speaker	
08:30 ~ 09:00	Registration		
09:00 ~ 09:30	Opening Ceremony		
09:30 ~ 10:30	Speech I		
10:30 ~ 10:50	Break		
10:50 ~ 12:00	Speech II		
12:00 ~ 13:30	Lunch Break		
13:30 ~ 14:50	Speech III		
14:50 ~ 15:10	Break		
15:10 ~ 16:30	Speech VI		
16:30 ~ 17:00	Discussion		
18:00 ~ 21:00	Welcome Dinner		
Second Day – Panel Discussion (8th Oct., 2009 / Thu.)			
09:00 ~ 10:10	Speech V		
10:10 ~ 10:30	Break		
10:30 ~ 11:40	Speech VI		
11:40 ~ 12:00	Discussion		
12:00 ~ 13:30	Lunch		

Experts of SEER related field are welcomed to recommend as invited speakers from APEC economies. Please send recommended experts and provide the following information□

Economies		Expert's name	
Service Institution		Institution website	
Position (Title)		Email address	
Tel.		Fax	
Address			
Areas of expertise			