

## **Biographical Sketch Timothy J. James**

Research Professor, Department of Economics, W. P. Carey School of Business  
Director of Research and Consulting, Seidman Research Institute, W. P. Carey School of Business  
Arizona State University, PO Box 874011, Tempe, AZ 85287-4011  
Phone: (480) 965-5362; Fax: (480) 965-5458; Timothy.James@asu.edu

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### **Education and Training**

University of Warwick, Economics, BA, 1983  
University of Warwick, Economics, M.A., 1984  
University of Southampton, Economics, Ph. D., 1992

### **Professional Experience**

*Research Professor, Department of Economics, W.P. Carey School of Business, Arizona State University*

*Director of Research and Consulting, Seidman Research Institute, W.P. Carey School of Business, Arizona State University*

Dr. James has extensive experience in economic and financial research and consulting, for both the public and private sectors, with particular expertise in the areas of energy policy, infrastructure, transportation, competitive strategy, competition policy and regulation, regional economic modeling, tourism and economic development. He is program manager and principal investigator for a \$4M multidisciplinary program of research evaluating the technical and financial/business feasibility of solar development in Arizona. He has also functioned as an advisor to the Prime Minister of the UK, the European Commission, the BBC, the Commonwealth Secretariat, Rail Passengers Council, the state of New Jersey, the Texas Department of Transport, Goldman Sachs, Morgan Stanley, UBS, the Pew Center on the States, and the Arizona Investment Council.

2007-present, Director of Research and Consulting, Seidman Research Institute, W.P. Carey School of Business, Arizona State University

2007-present, Research Professor, Department of Economics, W.P. Carey School of Business, Arizona State University

2004-2007, Director, Economics and Business Solutions, Halcrow Group Ltd.

2002-2004, Visiting Professor of Economics, Arizona State University

2000-2004, Associate Consultant (part-time), Oxford Economic Research Associates

1997-1999, Associate Consultant (part-time), Halcrow Group Ltd

1995-2002, Research Fellow, Advanced Railway Research Centre

1991-2002, Lecturer in Economics, University of Sheffield

1988-1993, Associate Consultant (part-time), Maxwell Stamp

1988-1990, Lecturer in Economics, Loughborough University

1986-1987, Lecturer in Economics, University of Stirling

### **Synergistic Activities**

1. *An Assessment of the Economic Impacts on the State of Arizona of the Imposition of a GHG Emission Allowance Trading Program – Principal Economist – 2009:* Led work to forecast the effects on the Arizona economy of a cap-and-trade allocation (auction) system for the seven member states of the Western Climate Initiative.
2. *Arizona's Infrastructure Requirements and Funding Alternatives: 2008-2032, (Arizona Investment Council), USA - 2007-2008:* Director of a project to examine Arizona's infrastructure

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- requirements in water, energy, transportation and telecommunications over the 25 years from 2008.
- 3. *Due Diligence on \$1bn Concession Contract (Goldman Sachs), Chicago, USA – Principal Economist – 2006:* Led work on demand forecasting (involving panel data econometric work) and the construction and validation of a detailed financial evaluation model.
  - 4. *Financial Appraisal – Iraq Grand Port (Hanna Sheikh Holding Corporation), Dubai-Project Manager – 2005:* Involved the evaluation of the financial case for the construction of a new port in southern Iraq with a capital cost of up to \$13bn.
  - 5. Widely published in the field of economics of public transportation including "Long distance passenger rail" in *From Here to There: Transportation Opportunities for Arizona*, 94<sup>th</sup> Arizona Town Hall (2009, with M. Croucher and E. Madley); *Infrastructure Needs and Funding Alternatives for Arizona, 2008-2032*" Arizona Investment Council (2008); "Public transport: Generalised costs" *Utilities Journal* (2002); *Funding the Railways, Looking Years Ahead: Setting the Scene*, Railway Passengers Council, London (2002, with Oxford Economic Research Associates); "On the Buses: 1985/86-1999/2000" in *Utilities Journal* (2001).

## Biographical Sketch Michael Kuby

Professor, School of Geographical Sciences and Urban Planning  
Arizona State University, PO Box 875302, Tempe, AZ 85287-5302  
Phone: (480) 965-6850 (pers. office) or (480) 965-7533 (dept. office)  
Fax: (480) 965-8313; mikekuby@asu.edu

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### **Education And Training**

University of Chicago, Geography, B.A., 1980  
Boston University, Geography, Ph.D., 1988

### **Professional Experience**

#### ***Professor, School of Geographical Sciences and Urban Planning, Arizona State University***

Dr. Kuby is a professor of geographical sciences at ASU, where he has taught since 1988. His research has been funded by the National Science Foundation, US Department of Energy, World Bank, U.S. Army Corps of Engineers, and NASA. He is lead author of the interactive textbook, *Human Geography in Action*, published by John Wiley & Sons. Kuby develops new models and decision support tools for sustainable energy and transport systems. Recent work has focused on optimal systems of alternative-fuel station infrastructure, the feasibility of hydrogen rental cars, and pipeline networks for carbon capture and storage. Rail transit has been another research direction, including predicting light-rail ridership and understanding the effects of climate and weather on rail transit.

2009-present, Professor, School of Geographical Sciences and Urban Planning, Arizona State University

2007-2009, Professor, School of Geographical Sciences, Arizona State University

1994-2007, Associate Professor, Department of Geography, Arizona State University

1988-1994, Assistant Professor, Department of Geography, Arizona State University

### **Synergistic Activities**

1. My research centers on designing sustainable energy and transport systems. Specifically, I develop optimization models for facility location or transport network design. These models help decision makers with technology choice and spatial organization of energy, transport, and environmental infrastructure. For example, as alternative-fuel transportation systems become more viable, a key ingredient for success will be where to locate the refueling stations. I have had NSF and DOE (Award No. DE-FC36-04G014225) grants to develop the approach, which locates stations on the shortest paths that drivers are take from their origins to their destinations. We have published papers in *Socioeconomic Planning Sciences, Networks and Spatial Economics, European Journal of Operational Research, Geographical Analysis, and International Journal of Hydrogen Energy*. I am developing a project with Margo Melendez of National Renewable Energy Laboratory on routing alt-fuel vehicles. I am also collaborating with Richard Middleton of Los Alamos National Laboratory on optimal design of carbon capture and storage networks.
2. From 1989 to 1996, I worked as the Technical Leader on major modeling projects with the World Bank in China. In the Coal Transport Study, we worked with China's State Planning Commission to optimize investment strategies for alleviating China's energy shortages. This project was a Finalist for the 1994 Franz Edelman Award for Management Science Achievement, given by the Institute for Operations Research and Management Science (INFORMS) based on quality and impact, and was published in *Energy and Interfaces*. Following the Coal Transport Study, the World Bank funded other projects on energy and transport

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investment strategies that led to developing and publishing innovative modeling approaches, which led to papers in *Geographical Analysis*, and *Journal of Geographical Systems*. Most relevant is a project on energy system optimization in China that traded off supply-side investments with energy conservation investments in a wide range of energy uses, published in *Energy Policy*.

3. Since 2001, I have done a number of studies related to the prospects for light rail in a polycentric city with a small downtown such as Phoenix. We have completed statistical and GIS studies on rail ridership, station area delineation, the effect of climate on ridership, the effect of daily weather on ridership, a typology of station areas in Phoenix, and measures of densification and transit-oriented development in Phoenix. Papers have appeared in *Transportation Research Part A* and *Journal of Transport Geography*, with other papers underway. I arranged for ASU graduate students to present five light rail research projects to planners at Valley Metro.
4. I completed several statistical studies for DOE as part of the National Energy Modeling System (NEMS), Model Quality Audit program. These studies examined the statistical basis for some of the key assumptions in the NEMS Coal Market Module. One study was an "Examination of Compositional Changes in Coal Mine Labor Productivity" (DE-AP01-97EI30115) and was published in *Energy* in 2001. Another study conducted an "Empirical Analysis of Capacity Expansion in the Coal Production Industry" (DE-AP01-96EI29120). I also served as a reviewer of the National Energy Modeling System. On these projects, I worked with Mike Mellish, Inderjit Kundra, Scott Sitzer, and Ed Flynn at DOE.
5. In 2009, I co-edited a background report on transportation for a non-profit organization called the Arizona Town Hall. Every six months, the Town Hall assembles a group of leaders, experts, practitioners, and regular folks to discuss a major issue for three days and make a series of recommendations, based in part on the background report assembled by one of the state universities. The recommendations are packaged with the background report (<http://www.aztownhall.org/reports/94.asp>) and used in focus groups and meetings across the state. I worked with the Town Hall Research Committee to outline the document, and then with dozens of professors, graduate students, and practitioners in a variety of fields to develop the 18 chapters. I also wrote or co-wrote three of the chapters, including the introduction and chapters on gasoline prices and alternative fuels. During this work I strengthened ties with civic leaders, including some at Arizona Public Service, the utility with which this project is partnering.

**Biographical Sketch**  
**Susan Ledlow**  
Associate Academic Professional  
School of Sustainability/Global Institute of Sustainability  
Arizona State University, PO Box 875502, Tempe, AZ 85287-5502  
Phone: (480) 965-8645; Fax: (480) 965-8087; susan.ledlow@asu.edu

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**Education and Training**

Arizona State University, Tempe, Anthropology, B.A., 1979  
Arizona State University, Tempe, Anthropology, M.A., 1990  
Arizona State University, Tempe, Social Psychology, M.A., 2002  
Arizona State University, Tempe, Social Psychology, Ph.D., 2004

**Professional Experience**

***Curriculum and Faculty Development Specialist, School of Sustainability, Global Institute of Sustainability, Arizona State University***

Dr. Ledlow is the Curriculum and Faculty Development Specialist for the School of Sustainability at Arizona State University. She coordinates the development of the graduate and undergraduate curriculum and the assessment plan for the School. Ledlow assists School faculty in the design and assessment of interdisciplinary seminars and project-based workshops, and teaches graduate and undergraduate courses herself. She offers training and one-to-one assistance to faculty and teaching assistants on collaboration and teaming, active-learning, and project-based learning. Ledlow has taught in community college, university, and non-profit settings and has been involved in faculty, staff, and organizational development for 25 years. Immediately prior to joining the Global Institute of Sustainability, she was at the Center for Learning and Teaching Excellence at ASU, where she provided workshops, seminars, and one-to-one assistance to faculty in active learning strategies (<http://clte.asu.edu/active/>), course and curriculum design, grant-writing, and classroom assessment. She also provided facilitation services on campus for strategic and long-range planning, decision-making, and curriculum development. In addition to her work at ASU, Susan consults with educational, non-profit, and corporate clients. She provides facilitation services and training in teaming, effective communication in the workplace, ethical influence in the workplace, decision-making and conflict resolution, strategic planning, the development and assessment of training programs, and training of trainers.

October 2006-present, Curriculum and Faculty Development Specialist/Associate Academic Professional, Global Institute of Sustainability/School of Sustainability, ASU  
1992-2006, Instructional Professional/Assistant Academic Professional, Center for Learning and Teaching Excellence, ASU;  
1989-1992, Assistant Director, Mountain States Multifunctional Resource Center, ASU  
1986-1989, Program Development Specialist, Mountain States Multifunctional Resource Center, ASU  
1984-1986, Research/Evaluation Specialist, National Indian Bilingual Center, Center for Indian Education, ASU

**Synergistic Activities**

1. Co-PI of *Sustainability Science for Sustainable Schools*, a National Science Foundation GK-12 grant dealing with implementing sustainability concepts including energy auditing and efficiency into science, technology, engineering and mathematics curricula at local high schools.
2. Facilitation of strategic planning for the Association for the Advancement of Sustainability in Higher Education, 2006

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3. Put together a team of advisors for the national office of the Salvation Army's Emergency Disaster Services. Provided talking points, recommendations and plans for post-Katrina housing for the Salvation Army's participation in the FEMA Housing Task Force, 2005
4. Directed the development of *Active/cooperative learning: Best Practices in engineering education* [Web Site]. Tempe, AZ: Center for Research in Education in Science, Math, Engineering and Technology at Arizona State University. Available: <http://clte.asu.edu/active>, 2000-2002
5. Publications include "Mate selection" in J. Ponzetti, et al., eds., *International Encyclopedia of Marriage and Family, 2nd ed.*, Vol. 3, Macmillan Reference USA, NY (2003 with D. T. Kenrick and J. M. Ackerman); "Evolutionary psychology: Adaptive predispositions and human culture" in DeLamater, J., ed., *Handbook of Social Psychology* (2nd ed.). Kluwer-Plenum, NY (2003, with D. T. Kenrich and J. M. Ackerman); "Quality of life" in E. K. Sadalla, ed. *Integrated Assessment of Human-Environmental Systems in the U.S.-Mexico Border Region*. Southwest Center for Environmental Research and Policy, San Diego, CA (2005, with E. K. Sadalla and S. Guhathakurta); and "Dynamical systems models as pedagogical devices: Using the B + 20 model in classroom settings." In E. K. Sadalla, ed., *Integrated Assessment of Human-Environmental Systems in the U.S.-Mexico Border Region*. Southwest Center for Environmental Research and Policy, San Diego, CA (2005, with E. K. Sadalla and S. Guhathakurta).

**Biographical Sketch**  
**Tammy Perkins**

Executive Assistant to the City Manager  
City Manager's Office, City of Phoenix

Phoenix City Hall, 12<sup>th</sup> Fl., 200 W Washington St, Phoenix, AZ 85003  
Phone: (602) 256-4275; Fax: (602) 261-8327; tammy.perkins@phoenix.gov

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**Education and Training**

Drake University, Des Moines, IA, Public Administration and Sociology, B.A., 1981  
University of Denver, Denver, CO, Energy and Environment Management, M.P.A., 1982  
Harvard University, Boston, MA, Senior Executives in State and Local Government, 2004

**Professional Experience**

***Executive Assistant to the City Manager, City Manager's Office, City of Phoenix, Phoenix, AZ***  
As Executive Assistant to the City Manager, Ms. Perkins leads two major citywide efforts: the City's 2010 Census program and Phoenix's Sustainability programs. The Census program helps assure an accurate count of residents and corresponding federal dollars for City programs. Sustainability programs are focused on innovation in service delivery, allowing the City to meet present needs without compromising the ability to meet the needs of future generations.

2008-present, Executive Assistant to the City Manager, City of Phoenix, Phoenix, AZ  
2006-2008, Acting Water Services Director, City of Phoenix, Phoenix, AZ  
2006, Acting Deputy City Manager, City of Phoenix, Phoenix, AZ  
1999-2006, Director, Neighborhood Services Department, City of Phoenix, Phoenix, AZ  
1993-1999, Deputy Director, Neighborhood Services Department, City of Phoenix, Phoenix, AZ  
1987-1993, Management Assistant III, Management and Budget Department, City of Phoenix, Phoenix, AZ  
1985-1986, Management Assistant II, City Manager's Office, City of Phoenix, Phoenix, AZ  
1984-1985, Management Assistant I, Mayor's Office, City of Phoenix, Phoenix, AZ  
1982-1984, Management Intern, Management Assistant I, Management and Budget Department, City of Phoenix, Phoenix, AZ.  
1981-1982, Administrative Intern  
1980, Management Intern, City Manager's Office, City of Boulder, Boulder, CO

### **Biographical Sketch**

#### **Patrick E. Phelan**

Professor, Ira A. Fulton Schools of Engineering

School of Mechanical, Aerospace, Chemical & Materials Engineering

Affiliate Faculty, School of Sustainability

Arizona State University, PO Box 876106, Tempe, AZ 85287-6106

Phone: (480) 965-1625; phelan@asu.edu

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#### **Education and Training**

Tulane University, New Orleans, LA, Mechanical Engineering, B.S., 1985

Massachusetts Institute of Technology, Cambridge, Mechanical Engineering, M.S., 1987

University of California, Berkeley, Mechanical Engineering, Ph.D., 1990

Tokyo Institute of Technology, Tokyo, Japan, Post-Doctoral Fellow, 1990-1992

#### **Professional Experience**

*Associate Director, National Center of Excellence on Sustainable Materials and Renewable Technologies, Arizona State University*

*Professor, Mechanical and Aerospace Engineering, Ira A. Fulton School of Engineering, Arizona State University*

Dr. Phelan's research interests are in the thermal sciences, including nanoscale transport processes; sustainable energy systems, particularly solar thermal energy and solar-powered cooling; and environmental heat transfer, especially urban heat islands and associated impacts on public health. He is the Associate Director of the National Center of Excellence on SMART Innovations for Urban Climate + Energy, where SMART = Sustainable Materials And Renewable Technologies. He also directs the Nanoscale Transport Processes & Sustainable Energy Laboratories. Phelan is a member of the American Society of Mechanical Engineers, in which he previously served as the Chair of the K-18 Committee on Low-Temperature Heat Transfer. He has also been a Motorola-ASU Summer Faculty Fellow, and a Summer Faculty Research Participant at the Argonne National Laboratory. Phelan's honors, awards, and appointments include an NSF CAREER Award. Together with his co-authors he received a Best Paper Award for the Heating and Cooling Applications and Analysis Track at the Energy Sustainability Conference, ASME Solar Energy Division.

2008-2011, Associate Editor, *ASME Journal of Heat Transfer*

2006-present, Associate Director, National Center of Excellence on Sustainable Materials and Renewable Technologies (SMART), Arizona State University

2006-2008, Program Director, Thermal Transport Processes, National Science Foundation

1997-2006, Director, Arizona State University Industrial Assessment Center

1996-present, Assistant, Associate and now Professor, Mechanical and Aerospace Engineering, Arizona State University

Summer 2000, Motorola-ASU Faculty Fellow

1992-1995, Assistant Professor, Mechanical Engineering, University of Hawaii

Summer 1994, Summer Faculty Research Participant, Argonne National Laboratory

#### **Synergistic Activities**

1. Engaged numerous undergraduate students in research and outreach activities, both in the laboratory and in the DOE-sponsored *Industrial Assessment Center*, in which teams of students provided energy assessments of local manufacturing companies. This led to a number of refereed journal publications on energy efficiency, some of which involve modeling and forecasting industrial energy consumption and intensity.

**Page 2 - Biographical Sketch - Patrick E. Phelan**

2. Served as the Director of the Thermal Transport Processes Program at the National Science Foundation from 2006-2008.
3. Served as mentor to three high school students carrying out science projects involving sustainable energy for the academic year 2008-2009.
4. Taught courses on "Energy and Society" to Honors students and to the general university community, targeting non-engineering students; developed and taught several online classes to reach a broader community of students.
5. Widely published in the fields of urban heat and energy consumption, including "Modeling effects of urban heat island mitigation strategies on heat-related morbidity: A case study for Phoenix, Arizona, USA" in *International Journal of Biometeorology* (in press, with H. R. Silva and J. S. Golden); "Development of a zero-dimensional mesoscale thermal model for urban climate" in *Journal of Applied Meteorology and Climatology* (2009, with H. R. Silva, R. Bhardwaj, J. S. Golden, and S. Grossman-Clarke); "A biometeorology study of climate and heat-related morbidity in Phoenix from 2001-2006" in *International Journal of Biometeorology* (2008, with J. S. Golden, D. Hartz, A. Brazek, and G. Luber; "Modeling and forecasting the U.S. manufacturing aggregate energy intensity" in *International Journal of Energy Research* (2008, with A. Alghandoor, R. Villalobos, and B. E. Phelan); and "U.S. manufacturing aggregate energy intensity decomposition: The application of multivariate regression analysis" in *International Journal of Energy Research* (2008, with A. Alghandoor, R. Villalobos, and B. E. Phelan).

### **Biographical Sketch**

**T. Agami Reddy**

SRP Professor of Energy and Environment

School of Architecture and School of Sustainability (joint)

Arizona State University, PO Box 871605, Tempe, AZ 85287-1605

Phone: 480-965-4460; reddyta@asu.edu

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#### **Education and Training**

Sri Aurobindo International Center of Education, Pondicherry, India, B.Sc., 1972

Sri Aurobindo Int. Center of Education, Pondicherry, India, Engineering Technology (Mechanical Engineering), B. Tech, 1974

Laboratoire de Thermodynamique and Energetique, University of Perpignan, France, Solar Energy, Diplome Etudes Approfondis DEA (M.Sc.), 1976

Laboratoire de Thermodynamique and Energetique, University of Perpignan, France, Thermodynamics, Ph.D., 1982

#### **Professional Experience**

**SRP Professor of Energy and Environment, jointly with the School of Architecture and School of Sustainability, Arizona State University**

Dr. Reddy is interested in energy sustainability and renewable energy (solar thermal and PV technology), building energy systems and demand-side energy efficiency and conservation in buildings, indoor air quality, green buildings, and advanced energy systems. His research focuses on advanced data analysis and inverse modeling methods; decision-support engineering tools for optimal operation of building energy systems which include condition monitoring, fault detection, supervisory control and dynamic load control; sustainable and low-energy cooling technology for buildings; solar thermal power systems; and the development of automated design and calibration methods using detailed building energy simulation programs. Reddy is a licensed mechanical engineer, a Fellow of both the American Society of Mechanical Engineers and the American Society of Heating Refrigerating and Air-conditioning Engineers, former Chair of the ASME Solar Energy and a member of the American Solar Energy Society.

- Jan 2009-present, SRP Professor of Energy and Environment, Jointly with School of Architecture and School of Sustainability, Arizona State University
- Sep 2003-Dec 2008, Professor, Civil, Architectural and Environmental Engineering Department, Drexel University, Philadelphia, PA
- Sep 1997-Aug 2003, Associate Professor, Civil, Architectural and Environmental Engineering Department, Drexel University, Philadelphia, PA
- Nov 2001-current, Joint appointment with the Department of Mechanical Engineering and Mechanics, Drexel University
- Jun 1991-Aug 1997, Assistant Director and Visiting Faculty, Energy Systems Laboratory, Mechanical Engineering Department, Texas A&M University, College Station, TX, USA
- Jun 1989-Jun 1991, Lecturer, Mechanical and Aerospace Department, Princeton University, Princeton, NJ
- Jan 1988-Jun 1991, Research Staff, Center for Energy and Environmental Studies, Princeton University, Princeton, NJ
- Jan 1987-Dec 1987, Visiting Scientist, Applied Solar Calculations Unit, Blaustein Institute for Desert Research, Ben Gurion University of the Negev, Sede Boqer, Israel
- Jan 1985-Dec 1986, Assistant Professor, Energy Technology Division, Asian Institute of Technology, Bangkok, Thailand

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**Synergistic Activities**

1. *Editor: Books/Special Issues/Conference Proceedings (total: 4 nos):* Reddy, T.A., Special Issue Editor on "Emerging Trends in Building Design, Diagnostics and Operation", *ASME Journal of Solar Energy Engineering*, August 2003 issue, 17 papers, volume 125, 2003.
2. *Handbook/Book Chapters (total 4 nos):* Maor, I. and T.A. Reddy. 2009. Chapter 2.1, CHP Basics: Applicability of CHP Systems in M. Meckler and L. Hyman, eds., *Sustainable On-Site CHP Systems: Design, Construction, Operations*, McGraw Hill, (in press). Reddy, T.A. 2000. Psychometrics and Comfort. Chapter 2.2 in J. Kreider, ed., *CRC Handbook of Heating, Ventilation, Air Conditioning, and Refrigeration*, 31 pages.
3. *Service to Professional Organizations:* American Society of Mechanical Engineers (ASME), (1993- current), Fellow (2008), Chair of the Solar Energy Division (2008), Service Awards- July 2004, July 2007, August 2008; American Society of Heating and Refrigeration Air Conditioning Engineers (ASHRAE) (1985-current), Fellow (2008), ASHRAE Distinguished Service award, June 2008. Associate Editor of the *ASME Journal of Solar Energy Engineering*, "Conservation and Solar Buildings", (Jan.02-Dec. 2005). Associate Editor for the *International Journal of Energy* (Editor: Noam Lior), (1989-2002).
4. Widely published in the fields of energy efficiency and modeling in buildings and in renewable energy, including a 400-page book published by Oxford University Press: "*The Design and Sizing of Active Solar Thermal Systems*" (1987). Editor of four books/conference proceedings and four handbook chapters. Have published over 100 refereed technical papers (of which 81 in refereed journals); over 30 conference papers; 53 dated significant technical reports; and 35 funded research projects. A sample of recent papers includes "Application of a generic evaluation methodology to assess four different chiller FDD methods" in *HVAC&R Research Journal* (2007); "Cost penalties of near-optimal scheduling control of BCHP systems: Modeling, optimization and analysis results" in *ASHRAE Transactions* (2009, with I. Maor); "Calibrating detailed building energy simulation programs with measured data - Part II: Application to three case study office buildings" in *HVAC&R Research Journal* (2007, with I. Maor and C. Ponjapornpon); and "Modeling and experimental evaluation of passive heat sinks for miniature high-flux photovoltaic concentrators" in *ASME Journal of Solar Energy Engineering* (2005, with J. Sun, T. Israeli, K. Scoles, J. M. Gordon, and D. Feuermann).

**Biographical Sketch**  
**Denise D. Resnik**  
Founder and President, Denise Resnick & Associates  
717 E Maryland Ave, Ste 110, Phoenix, AZ 85014  
Phone: (602) 956-8834; Fax: (602) 957-3159; denise@resnikpr.com

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**Education and Training**  
Arizona State University, Business, cum laude, B.A. 1982

**Professional Experience**

***Founder and President, Denise Resnik & Associates***

Denise, a native Phoenician, is the founder and president of the strategic marketing and public relations agency, Denise Resnik & Associates. Her expertise is drawn from more than 26 years of experience that includes serving as the chief marketing and communications strategist for a national autism consortium called Advancing Futures for Adults with Autism involving over 10 national autism organizations and 1,000 people from 16 different markets and acting as the primary communications consultant for numerous successful zoning and entitlement cases with extensive media and community outreach. Her relationships with the media, community opinion leaders and industry influencers run deep resulting in consistent media coverage and exposure for clients.

1982-86, Marketing Director, Del E. Webb Corporation (now Pulte)  
1986-present, Founder and President, Denise Resnik & Associates, Phoenix, Arizona  
1997-2007, Co-founder and Board Chair, Southwest Autism Research & Resource Center  
2007-present, Steering Committee Member, Advancing Futures for Adults with Autism

**Synergistic Activities**

1. Co-founder and current board development chair of the Southwest Autism Research & Resource Center (SARRC). Mother of an 18-year-old son with autism; served as SARRC's board chairman from 1997-2007. Today, SARRC is an internationally recognized nonprofit organization dedicated to autism research, education and community outreach and the support of individuals with autism and their families throughout their lifetimes. The 18,000-square-foot Campus for Exceptional Children and 10,000-square-foot Vocational & Life Skills Academy are state-of-the-art clinical centers that serve as national models for similar research and resource facilities. Her agency has provided significant in-kind support to SARRC and other non-profits since its inception.
2. Board member of Whispering Hope Ranch Foundation, a nonprofit organization dedicated to providing a camp and retreat facility for children with chronic illnesses and physical and developmental challenges. In addition, she serves as a board member of the Urban Land Institute (Arizona District Council), Nature Conservancy, Phoenix Community Alliance and the Arizona Community Foundation. Her firm supports or represents nearly 25 community, professional and leadership organizations.
3. Other accomplishments include the 2009 National Jae Davis Community Service Award by the Organization for Autism Research; 2008 Valley Leadership Woman of the Year; 2008 Golden Heart of Business Volunteer Executive of the Year; 2008 Kappa Kappa Gamma National Alumnae Achievement Award; 2007 Human Relations Award recipient by the Arizona Chapter of the American Jewish Committee; 2007 Evening of Champions Award recipient by the Autism Society of America; named one of L'Oreal's 2006 Women of Worth; 2005 Golden Heart of Business recipient by *Arizona Woman* magazine; 2001 Athena Award recipient by the Greater

**Page 2 – Biographical Sketch – Denise Resnik**

Phoenix Chamber of Commerce; 2001 Small Businessperson of the Year by the Greater Phoenix Chamber of Commerce; 2001 World of Well-Being recipient by the Arizona Cactus-Pine Girl Scout Council; and 1998 Arts Advocate of the Year by the Business Volunteers for the Arts of Phoenix.

**Biographical Sketch**  
**Cynthia Spell**

Deputy Director, Community and Economic Development, City of Phoenix  
Workforce Connection Division  
200 W Washington St., Phoenix, AZ 85003  
Phone: (602) 262-6776; Fax: (602) 534-3915; cynthia.spell@phoenix.gov

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**Education and Training**

Arizona State University, Social Work , M.S.W, 2000  
Licensed through the Arizona Board of Behavioral Health Examiners

**Professional Experience**

***Deputy Director, Community and Economic Development Department, Phoenix Workforce Connection, City of Phoenix, Phoenix, AZ***

Ms. Spell is currently responsible for administering the Community and Economic Development Department Phoenix Workforce Connection, Workforce Investment Act Title IB Adult, Dislocated Worker, and Youth program services. The adult and youth services are delivered through the Phoenix Workforce Connection (PWC) One-Stop System, in various locations within the City of Phoenix, in addition to various partnerships with community based, faith based, and other profit/non-profit organizations. Assistance rendered through the workforce system enables the job-seeking individuals to identify and build an appropriate skill profile that meets business and industry needs. In addition to Title IB program services, the Phoenix Workforce Connection One-Stop System provides a myriad of workforce solutions to large, medium and small employers throughout the greater Phoenix area in partnership with local and regional education and economic development entities.

August 1992-Present  
Community and Economic Development Department Phoenix Workforce Connection Services.

1991-1992  
Intake Specialist, Maricopa County Human Services Dept. JTPA  
(Government Administration industry)

Primary duties included prescreening and intake for job seekers requesting training and employment assistance from federal employment program administered by county government

**Synergistic Activities**

1. Suns Nite Hoops Board of Directors, an excellent opportunity to use workforce development experience to connect program participants with career and employment information and resources.
2. Member of the following organizations: International Economic Development Council; Arizona Association for Economic Development; National Forum for Black Public Administrators; and National Association for Social Workers.
3. Served in the United States Marine Corps and United States Marine Corps Reserves for over 18 years.



**City of Phoenix**  
FINANCE DEPARTMENT  
FINANCIAL SYSTEMS APPLICATIONS AND SUPPORT

TO: All Department Heads

DATE August 15, 2008

FROM: Susan Perkins, Deputy Finance Director



**SUBJECT: FRINGE BENEFIT RATES TO ADD TO DIRECT LABOR CHARGES**

The employee fringe benefit rates to add to direct labor charges on grant applications and expenditure reports for the 2008-2009 fiscal year are listed below:

**2008-2009 EMPLOYEE FRINGE BENEFIT VALUES**  
(shown as a percentage of average annual salary)

	General	Police	Fire
<b>GROUP I</b>			
Industrial Insurance	1.40%	1.40%	1.40%
Retirement System	11.18%	25.02%	23.19%
Social Security	7.65%	1.25%	1.07%
Clothing Allowance	-	1.53%	0.72%
Health, Dental, Life, Long-Term Disability, Cancer, Unemployment Insurance, Deferred Compensation Plan,	21.70%	15.53%	19.74%
Reduced Transit Fare & Educational Reimbursements	41.93%	44.73%	46.12%
Total Group I			
<b>GROUP II</b>			
Vacation	6.19%	5.95%	6.41%
Sick Leave	2.73%	1.84%	3.70%
Holidays	5.73%	5.34%	4.42%
Total Group II	14.65%	13.13%	14.53%
<b>TOTAL</b>	<u>56.58%</u>	<u>57.86%</u>	<u>60.65%</u>

The fringe benefit values listed in Group I are to be added to all salaries in computing employee costs. The benefit values included in Group II should not be added to employee wages when the employee is assigned full-time to a grant project. Vacation, sick and holiday leave costs for these employees are already included as part of the employee's gross wages in that particular activity.

These rates should not be used when preparing budget request materials. The Budget and Research Department will supply the correct rates to use when preparing estimates for the 2008-2009 and 2009-2010 fiscal years.

This memo does not apply to those departments using the SAP Controlling Module. Those departments who have activity rates computed have received individual letters giving them their labor, fringe and indirect cost rates for their activities in SAP.

If you have any questions regarding these rates, please contact Rhonda Fisher at 534-6264.

RF/CWFRINGE

cc: All Division and Function Heads

( )  
 CALCULATION OF PART TIME FRINGE  
 FOR FISCAL YEAR 2008-09  
 IN CONJUNCTION WITH CITY-WIDE FRINGE BENEFIT RATE

	GENERAL	POLICE	FIRE
Industrial (Worker's Comp.)	1.40%	1.40%	1.40%
F.I.C.A.	7.65%	-	-
Police/Fire Hires after 3/31/86	-	1.25%	1.07%
Unemployment	<u>0.01%</u>	<u>0.01%</u>	<u>0.01%</u>
	<u><b>8.06%</b></u>	<u><b>2.66%</b></u>	<u><b>2.48%</b></u>

CALCULATION OF OVERTIME FRINGE  
 FOR FISCAL YEAR 2008-09  
 IN CONJUNCTION WITH CITY-WIDE FRINGE BENEFIT RATE

	GENERAL	POLICE	FIRE
Industrial (Worker's Comp.)	1.40%	1.40%	1.40%
Retirement	11.18%	25.02%	23.19%
F.I.C.A.	7.65%	-	-
Police/Fire Hires after 3/31/86	-	1.25%	1.07%
Long-Term Disability *	0.00%	0.00%	0.00%
Unemployment	<u>0.01%</u>	<u>0.01%</u>	<u>0.01%</u>
	<u><b>20.24%</b></u>	<u><b>27.68%</b></u>	<u><b>25.87%</b></u>

DETAIL OF LINE CALLED "HEALTH, DENTAL, LIFE, LTD,  
 CANCER, UNEMPLOYMENT INSURANCE, REDUCED TRANSIT FARE,  
 DEFERRED COMPENSATION & EDUCATIONAL REIMBURSEMENT"  
 CITY WIDE FRINGE BENEFIT RATES FOR 2008-09

	GENERAL	POLICE	FIRE
Health Insurance	15.92%	11.52%	11.04%
Dental Insurance	1.49%	1.08%	1.03%
Life Insurance	0.22%	0.22%	0.22%
Long-Term Disability *	0.00%	0.00%	0.00%
Unemployment	0.01%	0.01%	0.01%
401h and Cancer Insurance	N/A	0.11%	0.98%
Reduced Transit Fare	0.13%	0.09%	0.09%
Deferred Compensation	3.62%	2.28%	6.16%
Educational Reimbursement	<u>0.31%</u>	<u>0.22%</u>	<u>0.21%</u>
	<u><b>21.70%</b></u>	<u><b>15.53%</b></u>	<u><b>19.74%</b></u>

\* The City is fully funded for FY08/09.

## PROJECT SUMMARY

**Project Director:** Dimitrios Laloudakis, Energy Manager, City of Phoenix Public Works Department  
**Partners:** City of Phoenix (Departments of Public Works, Neighborhood Services, Development Services, and Community and Economic Development)  
Arizona State University's Global Institute of Sustainability  
Arizona Public Service Company  
**Participants:** Denise Resnik & Associates Public Relations, Valley METRO Rail, Maricopa Community College District, AZ Department of Commerce, Office of Energy  
**Title:** Energize Phoenix: Transformation through Behavior and Retrofits along the Green Rail Corridor

**Project Objectives:** Arizona's largest city (1.6 million residents), largest university (68,000 students), and largest utility (1.1 million customers) propose a practical, yet innovative, energy-efficiency project that will transform the local energy market along a newly created "Green Rail Corridor." Project partners—the City of Phoenix (COP), the Global Institute of Sustainability (GIOS) at Arizona State University (ASU) and Arizona Public Service (APS)—have a long history of collaboration on large-scale projects in urban infrastructure, energy efficiency, and community development. The City's Water Conservation program is testimony to its capabilities in transforming behavior and integrating new technologies to create large-scale efficiencies. Phoenix uses the same amount of water today as it did 20 years ago, despite a doubling of population. Over our initial 6-year planning horizon, our goal is to renovate most of residential, commercial, and institutional space (10,500 homes and 90 million ft<sup>2</sup> of commercial/institutional space). The transformed Green Rail Corridor will be a readily identifiable, energy-democratizing region bound by a highly visible commitment to energy efficiency.

**Project Description:** We have a long-term vision to achieve market transformation. Years 1–3 emphasize substantial leveraging of DOE funds, installation of new technology, and a powerful behavioral-change campaign; out-years use our revolving loan fund and new revenue streams to continue energy retrofits, capitalize on the momentum of behavioral change, and institutionalize financial mechanisms. Strategic partnerships with APS and ASU will link COP operations, ASU research, and APS energy delivery and measurement. These relationships encourage retrofits by doubling existing utility incentives, evaluating and verifying participant energy savings, and assessing the degree to which the financial program transforms the market.

**Methods:** We combine creative financing and community-oriented initiatives that encourage behavioral change. Our fiscal approach is a game-changer for Arizona and substantially leverages DOE's investment. A Revolving Loan Fund with 5 locally operating banks will be a permanent source of capital at competitive interest rates. The City of Phoenix has already initiated a process to enact a Green Development Code and will lower sales taxes on apartments that retrofit. To sustain the project beyond DOE funding, The City will commit 100% of their savings from energy-efficiency projects in the Green Rail Corridor to sustain the program. We will achieve critical mass through a corridor-wide rollout of APS smart meters and deployment of energy dashboards that residents will use to track electricity use and change behaviors in real time. A high-touch marketing campaign will make energy efficiency the option of first choice in the Corridor.

**Impacts:** Energize Phoenix will model the best practices in the design and operation of transformative energy markets. Our project will occur along a multi-use, light rail line comparable to transportation corridors in many large cities, and lessons learned will be transferrable to cities across the US. Ultimately, the Green Rail Corridor will save 307.4 million kWh/yr translating into savings of more than \$26.2M/yr and reduced CO<sub>2</sub> emissions of 151,000 metric tons/yr. Development of the Green Rail Corridor will create up to 8,000 jobs in the clean-energy industry, boost savings for working families, and stimulate economic growth throughout the region.

**Project Impact Table For Energize Phoenix**

Project Impact Metrics	During Project Period			Post Project Period, Years 4-6		
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number of Buildings Retrofitted	100 commercial 400 owner occupied 400 apartments 400 low-to-moderate	250 commercial 1050 owner occupied 1050 apartments 1050 low-to-moderate	250 commercial 500 owner occupied 500 apartments 1050 low-to-moderate	100 commercial 500 owner occupied 500 apartments	100 commercial 500 owner occupied 500 apartments	100 commercial 500 owner occupied 500 apartments
Total square footage of buildings retrofitted (excluding dashboards)	11,760,000	29,620,000	29,620,000	11,600,000	11,600,000	11,600,000
Average utilities savings (e.g. cost and fuel savings) achieved per unit retrofitted	30.0M kWh/yr and \$2.5M/yr (commercial); 1.0M kWh/yr and \$0.1M/yr (owner occupied); 2.7M kWh/yr and \$0.2M/yr (owner occupied); 6.4M kWh/yr and \$0.5M/yr (owner occupied); 6.2M kWh/yr and \$0.2M/yr (weatherization); 0.6M kWh/yr and \$0.1M/yr (apartment); 3.6M kWh/yr and \$0.3M/yr (dashboard)	75.0M kWh/yr and \$6.4M/yr (commercial); 1.0M kWh/yr and \$0.1M/yr (owner occupied); 2.7M kWh/yr and \$0.2M/yr (weatherization); 1.5M kWh/yr and \$0.1M/yr (apartment); 9.0M kWh/yr and \$0.8M/yr (dashboard)	180.0M kWh/yr and \$15.3M/yr (commercial); 7.7M kWh/yr and \$0.7M/yr (owner occupied); 6.2M kWh/yr and \$0.5M/yr (weatherization); 3.7M kWh/yr and \$0.1M/yr (apartment); 15.0M kWh/yr and \$1.3M/yr (dashboard)	210.0M kWh/yr and \$17.9M/yr (commercial); 9.0M kWh/yr and \$0.7M/yr (owner occupied); 6.2M kWh/yr and \$0.5M/yr (weatherization); 4.5M kWh/yr and \$0.4M/yr (apartment); 15.0M kWh/yr and \$1.3M/yr (dashboard)	240.0M kWh/yr and \$20.4M/yr (commercial); 10.3M kWh/yr and \$0.8M/yr (owner occupied); 6.2M kWh/yr and \$0.5M/yr (weatherization); 5.1M kWh/yr and \$0.4M/yr (apartment); 15.0M kWh/yr and \$1.3M/yr (dashboard)	270.0M kWh/yr and \$23.0M/yr (commercial); 10.3M kWh/yr and \$0.9M/yr (owner occupied); 6.2M kWh/yr and \$0.5M/yr (weatherization); 5.9M kWh/yr and \$0.4M/yr (apartment); 15.0M kWh/yr and \$1.3M/yr (dashboard)
Jobs created or retained	1,460-2,044	1,536-2,150	1,553-2,174	630-882	630-882	648-907
Average emissions reductions (M metric tons CO2)	17,740	44,510	103,550	119,240	134,930	150,630
EECBG Funds Expended	\$24,490,746	\$24,379,203	\$25,784,338	n/a	n/a	n/a
Leveraged Funds and In-Kind Resources Expended	\$121,557,200	\$129,304,100	\$129,573,400	\$62,994,700	\$62,994,700	\$64,808,900

**Assumptions:**

Average size of a commercial retrofit is 100,000 sq. ft., average house size of 2,000 sq. ft. (APS data)  
 Annual average commercial electricity demand of 18.5 kWh/sq. ft., annual average residential electricity demand of 6.9 kWh/sq. ft. (APS data)

Annual average energy savings from commercial retrofit of 3.0 kWh/sq. ft. (ESCO data)

Annual average energy savings from residential retrofit of 1.29 kWh/sq. ft. (APS data)

Average energy savings from weatherization program of 28% (COP Weatherization Assistance Program data)

Average cost of electricity in Arizona of 8.5 cents per kWh (EIA data for 2007)

Average CO2 emissions from power generation of 0.49 kg/kWh (EIA data for 2007)

\*low/mod=low-to-moderate income



## City of Phoenix

OFFICE OF THE CITY MANAGER



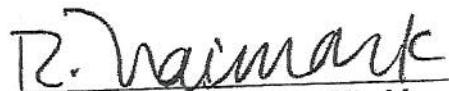
Subject: Required Assurances—DE-FOA-0000148

### Davis-Bacon Act

This is to certify that all laborers and mechanics on projects funded directly or assisted in whole or in part by and through funding appropriated by the Recovery Act will be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by subchapter IV of Chapter 31 of title 40, United States Code.

### Assurances

I hereby designate Neil Mann, Public Works Director, 602-256-5662,  
[neil.mann@phoenix.gov](mailto:neil.mann@phoenix.gov), as the authorized official to apply for and receive funding based on Title V, Subtitle E, Energy Efficiency and Conservation Block Grants, Sections 541 (3)(B) of IASA 2007, Public Law 110-140.

  
\_\_\_\_\_  
Rick Naimark, Deputy City Manager

12/8/09  
Date

**a. Personnel****PLEASE READ!!!**

List costs solely for employees of the entity completing this form (award recipient or sub-recipient). All other personnel costs (of subrecipients or other contractual efforts of the entity preparing this) must be included under f., Contractual. This includes all consultants and FFRDCs.

**Identify positions to be supported.** Key personnel should be identified by title. All other personnel should be identified either by title or a group category. State the amounts of time (e.g., hours or % of time) to be expended, the composite base pay rate, total direct personnel compensation and, identify the rate basis (e.g., actual salary, labor distribution report, technical estimate, state civil service rates, etc.).

Add rows as needed. Formulas/calculations will need to be entered by the preparer of this form. Please enter formulas as shown in the example.

Task # and Title	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 3			
1. Generation 2A Receiver Design EXAMPLE ONLY!!!	Sr. Engineer Electrical engineers	10000 2000 6200 1800	\$423,000 \$85.00 \$170,000 \$35.00 \$217,000 \$20.00	600 200 \$50.00 \$14,000 400 \$36,000	\$24,000 \$10,000 \$35.00 \$0.00	800 200 600 0	\$31,000 \$10,000 \$21,000 \$0.00	11400 2400 7200 0	\$478,000 \$190,000 \$252,000 \$0	11400 2400 7200 0	\$478,000 \$190,000 \$252,000 \$36,000	Actual Salary Actual Salary Actual Salary Actual Salary	
1. Task 1 - Retrofit	Technician												
Dept - NSD	Management Assistant II	1040	33.63	\$34,975	1040	33.63	\$34,975	1040	33.63	\$34,975	3,120	\$104,926	Actual Salary
Dept - Neighborhood Specialist	Neighborhood Specialist	1040	30.44	\$31,658	1040	30.44	\$31,658	1040	30.44	\$31,658	3,120	\$94,973	Actual Salary
Dept - PW	Project Manager	1040	31.98	\$33,259	1040	33.58	\$34,922	1040	35.26	\$36,668	3,120	\$104,850	Actual Salary
Dept - PW	Rehab Specialist	1040	24.89	\$25,886	1040	24.89	\$25,886	1040	24.89	\$25,886	3,120	\$77,657	Actual Salary
Dept - PW	Community Worker III	1040	16.75	\$17,420	1040	16.75	\$17,420	1040	16.75	\$17,420	3,120	\$52,260	Actual Salary
Dept - PW	Energy Manager	520	\$38.81	\$20,181	520	\$40.75	\$21,190	520	\$42.78	\$22,246	1,560	\$63,617	Actual Salary
Dept - PW	Grants Compliance Supervisor	520	\$35.41	\$18,413	520	\$37.18	\$19,334	520	\$39.04	\$20,301	1,560	\$68,048	Actual Salary
Dept - PW	Project Manager	1040	31.98	\$33,259	1040	33.58	\$34,922	1040	35.26	\$36,668	3,120	\$104,850	Actual Salary
Dept - PW	Energy Management Engineer	1248	\$30.44	\$37,989	1248	\$31.96	\$39,886	1248	\$33.56	\$41,883	3,744	\$119,758	Actual Salary
Dept - PW	Contracts Specialist II	520	\$30.44	\$15,829	520	\$31.96	\$16,619	520	\$33.56	\$17,451	1,560	\$49,899	Actual Salary
Dept - PW	Budget Analyst II	832	\$30.44	\$25,326	832	\$31.96	\$26,591	832	\$33.56	\$27,922	2,496	\$79,839	Actual Salary
Dept - Law	Energy Management Specialist	1248	\$26.15	\$32,635	1248	\$27.45	\$34,258	1248	\$28.83	\$35,980	3,744	\$102,873	Actual Salary
Dept - Law	Assistant Chief Council	104	\$54.60	\$5,678	104	\$57.33	\$5,962	104	\$60.19	\$6,260	312	\$17,900	Actual Salary
2. Task 2 - Weatherization													
Dept - NSD	Management Assistant II	1040	33.63	\$34,975	1040	35.31	\$36,724	1040	37.08	\$38,560	3,120	\$110,259	Actual Salary
Dept - PW	Project Manager	1040	31.98	\$33,259	1040	33.58	\$34,922	1040	35.26	\$36,668	3,120	\$104,850	Actual Salary
Dept - PW	Neighborhood Specialist	1040	30.44	\$31,658	1040	31.96	\$33,240	1040	33.56	\$34,903	3,120	\$99,801	Actual Salary
Dept - PW	Rehab Specialist	1040	24.89	\$25,886	1040	26.13	\$27,180	1040	27.44	\$28,539	3,120	\$81,604	Actual Salary
Dept - PW	Community Worker III	1040	16.75	\$17,420	1040	17.59	\$18,291	1040	18.47	\$19,206	3,120	\$54,917	Actual Salary
Dept - PW	Energy Manager	520	\$38.81	\$20,181	520	\$40.75	\$21,190	520	\$42.78	\$22,246	1,560	\$63,617	Actual Salary
Dept - PW	Grants Compliance Supervisor	520	\$35.41	\$18,413	520	\$37.18	\$19,334	520	\$39.04	\$20,301	1,560	\$68,048	Actual Salary
Dept - PW	Project Manager	1040	31.98	\$33,259	1040	33.58	\$34,922	1040	35.26	\$36,668	3,120	\$104,850	Actual Salary

Task # and Title	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 2	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 3			
Energy Management Engineer	520	\$30.44	\$15,829	520	\$31.96	\$16,619	520	\$33.56	\$17,451	1,560	\$49,899	Actual Salary	
Contracts Specialist II	520	\$30.44	\$15,829	520	\$31.96	\$16,619	520	\$33.56	\$17,451	1,560	\$49,899	Actual Salary	
Budget Analyst II	832	\$30.44	\$25,326	832	\$31.96	\$26,591	832	\$33.56	\$27,922	2,496	\$79,839	Actual Salary	
Energy Management Specialist	832	\$26.15	\$21,757	832	\$27.45	\$22,838	832	\$28.83	\$23,987	2,496	\$68,582	Actual Salary	
Dept - Law Assistant Chief Council	104	\$34.60	\$5,678	104	\$57.33	\$5,962	104	\$60.19	\$6,260	312	\$17,900	Actual Salary	
<b>3. Task 3 - Marketing and Education</b>													
Dept - PW Energy Manager	520	\$38.81	\$20,181	520	\$40.75	\$21,190	520	\$42.78	\$22,246	1,560	\$63,617	Actual Salary	
Grants Compliance Supervisor	520	\$35.41	\$18,413	520	\$37.18	\$19,334	520	\$39.04	\$20,301	1,560	\$56,048	Actual Salary	
Contracts Specialist II	520	\$30.44	\$15,829	520	\$31.96	\$16,619	520	\$33.56	\$17,451	1,560	\$49,899	Actual Salary	
Budget Analyst II	208	\$30.44	\$6,332	208	\$31.96	\$6,648	208	\$33.56	\$6,980	624	\$19,960	Actual Salary	
Dept - Law Assistant Chief Council	52	\$54.60	\$2,839	52	\$57.33	\$2,981	52	\$60.19	\$3,130	156	\$8,950	Actual Salary	
<b>3. Task 4 - Revolving Loan Fund</b>													
Dept - CED Business Assistance Coordinator	2080	37.18	\$77,334	2080	\$39.60	\$82,361	2080	\$42.17	\$87,715	6240	\$247,410	Actual Salary	
Dept - PW Energy Manager	520	\$38.81	\$20,181	520	\$40.75	\$21,190	520	\$42.78	\$22,246	1,560	\$63,617	Actual Salary	
Grants Compliance Supervisor	520	\$35.41	\$18,413	520	\$37.18	\$19,334	520	\$39.04	\$20,301	1,560	\$56,048	Actual Salary	
Contracts Specialist II	520	\$30.44	\$15,829	520	\$31.96	\$16,619	520	\$33.56	\$17,451	1,560	\$49,899	Actual Salary	
Budget Analyst II	208	\$30.44	\$6,332	208	\$31.96	\$6,648	208	\$33.56	\$6,980	624	\$19,960	Actual Salary	
Dept - Law Assistant Chief Council	52	\$54.60	\$2,839	52	\$57.33	\$2,981	52	\$60.19	\$3,130	156	\$8,950	Actual Salary	
<b>Total Personnel Costs</b>	<b>27040</b>		<b>\$836,501</b>	<b>27040</b>		<b>\$873,960</b>	<b>27040</b>		<b>\$913,408</b>	<b>0</b>	<b>\$2,623,869</b>		

Additional Explanations/Comments (as necessary)

**Budget Information - Non Construction Programs****Section A - Budget Summary**

Grant Program Function or Activity	Catalog of Federal Domestic Assistance Number	Estimated Unobligated Funds			New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)	
1. Retrofit	81.128	\$0	\$0	\$34,019,681		\$34,019,681	
2. Weatherization	81.128			\$13,289,692		\$13,289,692	
3. Marketing & Education	81.128			\$2,297,622		\$2,297,622	
4. Revolving Loan Fund	81.128			\$15,349,818		\$15,349,818	
5. Totals		\$0	\$0	\$64,956,813	\$0	\$64,956,813	

**Section B - Budget Categories**

6. Object Class Categories	Grant Program, Function or Activity	Task 1: Retrofit	Task 2: Weatherization	Task 3: Marketing & Educa	Task 4: Revolving Loan Fund	Total (5)
a. Personnel	\$1,031,448	\$944,063	\$200,474	\$447,884	\$2,623,869	\$2,623,869
b. Fringe Benefits	\$432,486	\$390,748	\$82,976	\$185,379	\$1,091,589	\$1,091,589
c. Travel	\$15,000	\$0	\$0	\$4,750	\$19,750	\$19,750
d. Equipment	\$0	\$18,000	\$0	\$6,000	\$24,000	\$24,000
e. Supplies	\$0	\$31,515	\$0	\$1,576	\$33,091	\$33,091
f. Contractual	\$32,439,500	\$11,705,000	\$2,000,000	\$225,000	\$46,369,500	\$46,369,500
g. Construction	\$0	\$0	\$0	\$0	\$0	\$0
h. Other	\$26,000	\$124,904	\$0	\$14,446,950	\$14,597,854	\$14,597,854
i. Total Direct Charges (sum of 6a-h)	\$33,944,434	\$13,214,230	\$2,283,450	\$15,317,539	\$64,759,653	\$64,759,653
j. Indirect Charges	\$75,247	\$75,462	\$14,172	\$32,279	\$197,160	\$197,160
k. Totals (sum of 6i-j)	\$34,019,681	\$13,289,692	\$2,297,622	\$15,349,818	\$64,956,813	\$64,956,813
7. Program Income					\$0	\$0

Section C - Non-Federal Resources					
	(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) Totals
8.					\$0
9.					\$0
10.					\$0
11.					\$0
<b>12. Total (sum of lines 8 - 11)</b>					\$0
<b>Section D - Forecasted Cash Needs</b>					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal		\$0			
14. Non-Federal		\$0			
<b>15. Total (sum of lines 13 and 14)</b>		\$0			\$0
<b>Section E - Budget Estimates of Federal Funds Needed for Balance of the Project</b>					
	(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16.					
17.					
18.					
19.					
<b>20. Total (sum of lines 16-19)</b>		\$0			\$0
<b>Section F - Other Budget Information</b>					
21. Direct Charges	22. Indirect Charges	5% was used for non-capital costs			
<b>Subawardees listed on separate forms.</b>					
<b>23. Remarks</b>					

SF-424A (Rev. 4-92)  
Prescribed by OMB Circular A-102

## Instructions for the SF-424A

Public Reporting Burden for this collection of information is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please do not return your completed form to the Office of Management and Budget; send it to the address provided by the sponsoring agency.

### General Instructions

This form is designed so that application can be made for funds from one or more grant programs. In preparing the budget, adhere to any existing Federal grantor agency guidelines which prescribe how and whether budgeted amounts should be separately shown for different functions or activities within the program. For some programs, grantor agencies may require budgets to be separately shown by function or activity. For other programs, grantor agencies may require a breakdown by function or activity. Sections A, B, C, and D should include budget estimates for the whole project except when applying for assistance which requires Federal authorization in annual or other funding period increments. In the later case, Sections A, B, C, and D should provide the budget for the first budget period (usually a year) and Section E should present the need for Federal assistance in the subsequent budget periods. All applications should contain a breakdown by the object class categories shown in Lines a-k of Section B.

### Section A. Budget Summary Lines 1-4. Columns (a) and (b)

For applications pertaining to a single Federal grant program (Federal Domestic Assistance Catalog number) and not requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a single program requiring budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in Column (a) and the respective catalog number on each line in Column (b).

For applications pertaining to multiple programs where one or more programs require a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

### Lines 1-4, Columns (c) through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

For continuing grant program applications, submit these forms before the end of each funding period as required by the grantor agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in columns (e) and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

For supplemental grants and changes to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

Line 5—Show the totals for all columns used.

### Section B. Budget Categories

In the column headings (a) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

Lines 6a-i—Show the totals of Lines 6a to 6h in each column.

Line 6j—Show the amount of indirect cost.

Line 6k—Enter the total of amounts on Lines 6i and 6j. For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase- or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.

Line 7—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.

### **Section C. Non-Federal Resources**

**Lines 8-11**—Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

**Column (a)**—Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

**Column (b)**—Enter the contribution to be made by the applicant.

**Column (c)**—Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

**Column (d)**—Enter the amount of cash and in-kind contributions to be made from all other sources.

**Column (e)**—Enter totals of Columns (b), (c), and (d).

**Line 12**—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

### **Section D. Forecasted Cash Needs**

**Line 13**—Enter the amount of cash needed by quarter from the grantor agency during the first year.

**Line 14**—Enter the amount of cash from all other sources needed by quarter during the first year.

**Line 15**—Enter the totals of amounts on Lines 13 and 14.

### **Section E. Budget Estimates of Federal Funds Needed for Balance of the Project**

**Lines 16-19**—Enter in Column (a) the same grant program titles shown in Column

(a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

**Line 20**—Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

### **Section F. Other Budget Information**

**Line 21**—Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

**Line 22**—Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

**Line 23**—Provide any other explanations or comments deemed necessary.

**Budget Information - Non Construction Programs**

OMB Approval No. 0348-0044

**Section A - Budget Summary**

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Year 1 - COP	81.128		\$21,049,731			\$21,049,731
2.						\$0
3.						\$0
4.						\$0
5. Totals		\$0	\$0	\$21,049,731	\$0	\$21,049,731
<b>Section B - Budget Categories</b>						
<b>Grant Program, Function or Activity</b>						
6. Object Class Categories	Task 1: Retrofit	Task 2: Weatherization	Task 3: Marketing & Educa	Task 4: Revolving Loan Fund	Total (5)	
a. Personnel	\$332,509	\$299,470	\$63,594	\$140,928	\$836,501	
b. Fringe Benefits	\$139,421	\$123,951	\$26,321	\$58,330	\$348,023	
c. Travel	\$5,000	\$0	\$0	\$1,500	\$6,500	
d. Equipment	\$0	\$18,000	\$0	\$6,000	\$24,000	
e. Supplies	\$0	\$10,200	\$0	\$500	\$10,700	
f. Contractual (Consultants)	\$9,086,333	\$4,033,000	\$1,000,000	\$125,000	\$14,244,333	
g. Construction	\$0	\$0	\$0	\$0	\$0	
h. Other	\$12,000	\$56,168		\$5,446,811	\$5,514,979	
i. Total Direct Charges (sum of 6a-6h)	\$9,575,263	\$4,540,789	\$1,089,915	\$5,779,069	\$20,985,036	
j. Indirect Charges	\$24,447	\$25,389	\$4,496	\$10,363	\$64,695	
k. Totals (sum of 6i-6j)	\$9,599,710	\$4,566,178	\$1,094,411	\$5,789,432	\$21,049,731	
7. Program Income					\$0	

Section C - Non-Federal Resources					
	(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) Totals
8. Year 1 - COP-DOE					\$0
9.					\$0
10.					\$0
11.					\$0
12. Total (sum of lines 8 - 11)	\$0		\$0		\$0
<b>Section D - Forecasted Cash Needs</b>					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	\$21,049,731	\$5,262,432	\$5,262,433	\$5,262,433	\$5,262,433
14. Non-Federal	\$0				
15. Total (sum of lines 13 and 14)	\$21,049,731	\$5,262,432	\$5,262,433	\$5,262,433	\$5,262,433
<b>Section E - Budget Estimates of Federal Funds Needed for Balance of the Project</b>					
		Future Funding Periods (Years)			
		(b) First	(c) Second	(d) Third	(e) Fourth
16. Year 2 and 3 - COP-DOE			\$21,267,666		\$22,639,416
17.					
18.					
19.					
20. Total (sum of lines 16-19)	\$0	\$21,267,666		\$22,639,416	\$0
<b>Section F - Other Budget Information</b>					
21. Direct Charges	22. Indirect Charges 5% was used for non-capital costs				
Subawardees listed on separate forms.					
23. Remarks					

## Instructions for the SF-424A

Public Reporting Burden for this collection of information is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please do not return your completed form to the Office of Management and Budget; send it to the address provided by the sponsoring agency.

### General Instructions

This form is designed so that application can be made for funds from one or more grant programs. In preparing the budget, adhere to any existing Federal grantor agency guidelines which prescribe how and whether budgeted amounts should be separately shown for different functions or activities within the program. For some programs, grantor agencies may require budgets to be separately shown by function or activity. For other programs, grantor agencies may require a breakdown by function or activity. Sections A, B, C, and D should include budget estimates for the whole project except when applying for assistance which requires Federal authorization in annual or other funding period increments. In the later case, Sections A, B, C, and D should provide the budget for the first budget period (usually a year) and Section E should present the need for Federal assistance in the subsequent budget periods. All applications should contain a breakdown by the object class categories shown in Lines a-k of Section B.

### Section A. Budget Summary Lines 1-4 Columns (a) and (b)

For applications pertaining to a single Federal grant program (Federal Domestic Assistance Catalog number) and not requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a single program requiring budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in Column (a) and the respective catalog number on each line in Column (b).

For applications pertaining to multiple programs where one or more programs require a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

### Lines 1-4, Columns (c) through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

For continuing grant program applications, submit these forms before the end of each funding period as required by the grantor agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in columns (e) and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

For supplemental grants and changes to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

Line 5—Show the totals for all columns used.

### Section B. Budget Categories

In the column headings (a) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a). Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

Lines 6a-i—Show the totals of Lines 6a to 6h in each column.

Line 6j—Show the amount of indirect cost.

Line 6k—Enter the total of amounts on Lines 6i and 6j. For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.

Line 7—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.

### **Section C. Non-Federal Resources**

**Lines 8-11**—Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

**Column (a)**—Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

**Column (b)**—Enter the contribution to be made by the applicant.

**Column (c)**—Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

**Column (d)**—Enter the amount of cash and in-kind contributions to be made from all other sources.

**Column (e)**—Enter totals of Columns (b), (c), and (d).

**Line 12**—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

### **Section D. Forecasted Cash Needs**

**Line 13**—Enter the amount of cash needed by quarter from the grantor agency during the first year.

**Line 14**—Enter the amount of cash from all other sources needed by quarter during the first year.

**Line 15**—Enter the totals of amounts on Lines 13 and 14.

### **Section E. Budget Estimates of Federal Funds Needed for Balance of the Project**

**Lines 16-19**—Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

**Line 20**—Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

### **Section F. Other Budget Information**

**Line 21**—Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

**Line 22**—Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

**Line 23**—Provide any other explanations or comments deemed necessary.



Applicant Name: CITY OF PHOENIX - YR 2

Award Number:

## Budget Information - Non Construction Programs

### Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds			New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)	
1. Year 2 • COP	81.128			\$21,267,666			\$21,267,666
2.							\$0
3.							\$0
4.							\$0
5. Totals		\$0	\$0	\$21,267,666	\$0		\$21,267,666
Section B - Budget Categories							
Grant Program, Function or Activity							
6. Object Class Categories	Task 1: Retrofit	Task 2: Weatherization	Task 3: Marketing & Educa	Task 4: Revolving Loan Fund	Total (5)		
a. Personnel	\$343,623	\$314,433	\$66,772	\$149,133	\$873,961		
b. Fringe Benefits	\$144,081	\$130,144	\$27,637	\$61,726	\$363,588		
c. Travel	\$5,000	\$0	\$0	\$1,500	\$6,500		
d. Equipment	\$0	\$0	\$0	\$0	\$0		
e. Supplies	\$0	\$10,500	\$0	\$525	\$11,025		
f. Contractual (Consultants)	\$10,920,333	\$3,836,000	\$600,000	\$50,000	\$15,406,333		
g. Construction	\$0		\$0		\$0		
h. Other	\$7,000	\$34,368	\$0	\$4,500,070	\$4,541,438		
i. Total Direct Charges (sum of 6a-6h)	\$11,420,037	\$4,325,445	\$694,409	\$4,762,954	\$21,202,845		
j. Indirect Charges	\$24,985	\$24,472	\$4,720	\$10,644	\$64,821		
k. Totals (sum of 6i-6j)	\$11,445,022	\$4,349,917	\$699,129	\$4,773,598	\$21,267,666		
7. Program Income					\$0		

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Section C - Non-Federal Resources					
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) Totals	
8.					\$0
9.					\$0
10.					\$0
11.					\$0
<b>12. Total (sum of lines 8 - 11)</b>		<b>\$0</b>		<b>\$0</b>	<b>\$0</b>
<b>Section D - Forecasted Cash Needs</b>					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$21,267,666	\$5,316,916	\$5,316,916	\$5,316,916	\$5,316,918
14. Non-Federal	\$0				
<b>15. Total (sum of lines 13 and 14)</b>	<b>\$21,267,666</b>	<b>\$5,316,916</b>	<b>\$5,316,916</b>	<b>\$5,316,916</b>	<b>\$5,316,918</b>
<b>Section E - Budget Estimates of Federal Funds Needed for Balance of the Project</b>					
		Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth	
16. Year 3 - COP-DOE				\$22,639,416	
17.					
18.					
19.					
<b>20. Total (sum of lines 16-19)</b>		<b>\$0</b>		<b>\$0</b>	<b>\$22,639,416</b>
<b>Section F - Other Budget Information</b>					
21. Direct Charges	22. Indirect Charges				
Subawardees listed on separate forms.					
5% was used for non-capital costs					
23. Remarks					

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**Section A. Budget Summary Lines 1-4 Columns (a) and (b)**  
For applications pertaining to a single Federal grant program (Federal Domestic Assistance Catalog number) and not requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a single program requiring budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in **Column (a)** and the respective catalog number on each line in Column (b).

For applications pertaining to multiple programs where one or more programs require a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

### Lines 1-4, Columns (c) through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

**For continuing grant program applications,** submit these forms before the end of each funding period as required by the grantor agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in columns (e) and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

**For supplemental grants and changes** to existing grants, do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

**Line 5—Show the totals for all columns used.**

### Section B. Budget Categories

In the column headings (a) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

**Lines 6a-i—Show the totals of Lines 6a to 6h in each column.**

**Line 6j—Show the amount of indirect cost.**

**Line 6k—Enter the total of amounts on Lines 6i and 6j.** For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.

**Line 7—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.**

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### **Section C. Non-Federal Resources**

**Lines 8-11**—Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

**Column (a)**—Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

**Column (b)**—Enter the contribution to be made by the applicant.

**Column (c)**—Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

**Column (d)**—Enter the amount of cash and in-kind contributions to be made from all other sources.

**Column (e)**—Enter totals of Columns (b), (c), and (d).

**Line 12**—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

### **Section D. Forecasted Cash Needs**

**Line 13**—Enter the amount of cash needed by quarter from the grantor agency during the first year.

**Line 14**—Enter the amount of cash from all other sources needed by quarter during the first year.

**Line 15**—Enter the totals of amounts on Lines 13 and 14.

### **Section E. Budget Estimates of Federal Funds Needed for Balance of the Project**

**Lines 16-19**—Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

**Line 20**—Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

### **Section F. Other Budget Information**

**Line 21**—Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

**Line 22**—Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

**Line 23**—Provide any other explanations or comments deemed necessary.

## Budget Information - Non Construction Programs

### Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds			New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)	
1. Year 3 - COP	81.128			\$22,639,417			\$22,639,417
2.							\$0
3.							\$0
4.							\$0
5. Totals		\$0	\$0	\$22,639,417	\$0		\$22,639,417

### Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity			Total (5)
	Task 1: Retrofit	Task 2: Weatherization	Task 3: Marketing & Education	
a. Personnel	\$355,318	\$330,161	\$70,108	\$913,409
b. Fringe Benefits	\$148,984	\$136,653	\$29,018	\$379,998
c. Travel	\$5,000	\$0	\$0	\$6,750
d. Equipment	\$0	\$0	\$0	\$0
e. Supplies	\$0	\$10,815	\$0	\$551
f. Contractual (Consultants)	\$12,432,833	\$3,836,000	\$400,000	\$16,718,833
g. Construction	\$0	\$0	\$0	\$0
h. Other	\$7,000	\$34,368	\$0	\$4,500,070
i. Total Direct Charges (sum of 6a-6h)	\$12,949,135	\$4,347,997	\$499,126	\$4,775,516
j. Indirect Charges	\$25,815	\$25,600	\$4,956	\$11,272
k. Totals (sum of 6i-6j)	\$12,974,950	\$4,373,597	\$504,082	\$4,786,788
7. Program Income				\$0

Section C - Non-Federal Resources					
(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e) Totals
8.	Year 3 - COP-DOE				\$0
9.					\$0
10.					\$0
11.					\$0
12. Total (sum of lines 8 - 11)		\$0	\$0	\$0	\$0
<b>Section D - Forecasted Cash Needs</b>					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	\$22,639,417	\$5,659,954	\$5,659,954	\$5,659,954	\$5,659,955
14. Non-Federal	\$0				
15. Total (sum of lines 13 and 14)	\$22,639,417	\$5,659,954	\$5,659,954	\$5,659,954	\$5,659,955
<b>Section E - Budget Estimates of Federal Funds Needed for Balance of the Project</b>					
Future Funding Periods (Years)					
(a) Grant Program		(b) First	(c) Second	(d) Third	(e) Fourth
16.		\$0			
17.					
18.					
19.					
20. Total (sum of lines 16-19)		\$0	\$0	\$0	\$0
<b>Section F - Other Budget Information</b>					
21. Direct Charges	22. Indirect Charges				
Subawardees listed on separate forms.					
23. Remarks					

## Instructions for the SF-424A

Public Reporting Burden for this collection of information is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Please do not return your completed form to the Office of Management and Budget; send it to the address provided by the sponsoring agency.

### General Instructions

This form is designed so that application can be made for funds from one or more grant programs. In preparing the budget, adhere to any existing Federal grantor agency guidelines which prescribe how and whether budgeted amounts should be separately shown for different functions or activities within the program. For some programs, grantor agencies may require budgets to be separately shown by function or activity. For other programs, grantor agencies may require a breakdown by function or activity. Sections A, B, C, and D should include budget estimates for the whole project except when applying for assistance which requires Federal authorization in annual or other funding period increments. In the later case, Sections A, B, C, and D should provide the budget for the first budget period (usually a year) and Section E should present the need for Federal assistance in the subsequent budget periods. All applications should contain a breakdown by the object class categories shown in Lines a-k of Section B.

### Section A. Budget Summary Lines 1-4 Columns (a) and (b)

For applications pertaining to a single Federal grant program (Federal Domestic Assistance Catalog number) and not requiring a functional or activity breakdown, enter on Line 1 under Column (a) the catalog program title and the catalog number in Column (b).

For applications pertaining to a single program requiring budget amounts by multiple functions or activities, enter the name of each activity or function on each line in Column (a), and enter the catalog number in Column (b). For applications pertaining to multiple programs where none of the programs require a breakdown by function or activity, enter the catalog program title on each line in Column (a) and the respective catalog number on each line in Column (b).

For applications pertaining to multiple programs where one or more programs require a breakdown by function or activity, prepare a separate sheet for each program requiring the breakdown. Additional sheets should be used when one form does not provide adequate space for all breakdown of data required. However, when more than one sheet is used, the first page should provide the summary totals by programs.

### Lines 1-4, Columns (c) through (g)

For new applications, leave Columns (c) and (d) blank. For each line entry in Columns (a) and (b), enter in Columns (e), (f), and (g) the appropriate amounts of funds needed to support the project for the first funding period (usually a year).

**For continuing grant program applications,** submit these forms before the end of each funding period as required by the grantor agency. Enter in Columns (c) and (d) the estimated amounts of funds which will remain unobligated at the end of the grant funding period only if the Federal grantor agency instructions provide for this. Otherwise, leave these columns blank. Enter in columns (e), and (f) the amounts of funds needed for the upcoming period. The amount(s) in Column (g) should be the sum of amounts in Columns (e) and (f).

**For supplemental grants and changes to existing grants,** do not use Columns (c) and (d). Enter in Column (e) the amount of the increase or decrease of Federal funds and enter in Column (f) the amount of the increase or decrease of non-Federal funds. In Column (g) enter the new total budgeted amount (Federal and non-Federal) which includes the total previous authorized budgeted amounts plus or minus, as appropriate, the amounts shown in Columns (e) and (f). The amount(s) in Column (g) should not equal the sum of amounts in Columns (e) and (f).

**Line 5—Show the totals for all columns used.**

### Section B. Budget Categories

In the column headings (a) through (4), enter the titles of the same programs, functions, and activities shown on Lines 1-4, Column (a), Section A. When additional sheets are prepared for Section A, provide similar column headings on each sheet. For each program, function or activity, fill in the total requirements for funds (both Federal and non-Federal) by object class categories.

**Lines 6a-i—Show the totals of Lines 6a to 6h in each column.**

**Line 6j—Show the amount of indirect cost.**

**Line 6k—Enter the total of amounts on Lines 6i and 6j.** For all applications for new grants and continuation grants the total amount in column (5), Line 6k, should be the same as the total amount shown in Section A, Column (g), Line 5. For supplemental grants and changes to grants, the total amount of the increase or decrease as shown in Columns (1)-(4), Line 6k should be the same as the sum of the amounts in Section A, Columns (e) and (f) on Line 5.

**Line 7—Enter the estimated amount of income, if any, expected to be generated from this project. Do not add or subtract this amount from the total project amount. Show under the program narrative statement the nature and source of income. The estimated amount of program income may be considered by the federal grantor agency in determining the total amount of the grant.**

### **Section C. Non-Federal Resources**

### **Section E. Budget Estimates of Federal Funds Needed for Balance of the Project**

**Line 8-11**—Enter amounts of non-Federal resources that will be used on the grant. If in-kind contributions are included, provide a brief explanation on a separate sheet.

**Column (a)**—Enter the program titles identical to Column (a), Section A. A breakdown by function or activity is not necessary.

**Column (b)**—Enter the contribution to be made by the applicant.

**Column (c)**—Enter the amount of the State's cash and in-kind contribution if the applicant is not a State or State agency. Applicants which are a State or State agencies should leave this column blank.

**Column (d)**—Enter the amount of cash and in-kind contributions to be made from all other sources.

**Column (e)**—Enter totals of Columns (b), (c), and (d).

**Line 12**—Enter the total for each of Columns (b)-(e). The amount in Column (e) should be equal to the amount on Line 5, Column (f) Section A.

### **Section D. Forecasted Cash Needs**

**Line 13**—Enter the amount of cash needed by quarter from the grantor agency during the first year.

**Line 14**—Enter the amount of cash from all other sources needed by quarter during the first year.

**Line 15**—Enter the totals of amounts on Lines 13 and 14.

**Lines 16-19**—Enter in Column (a) the same grant program titles shown in Column (a), Section A. A breakdown by function or activity is not necessary. For new applications and continuation grant applications, enter in the proper columns amounts of Federal funds which will be needed to complete the program or project over the succeeding funding periods (usually in years). This section need not be completed for revisions (amendments, changes, or supplements) to funds for the current year of existing grants.

If more than four lines are needed to list the program titles, submit additional schedules as necessary.

**Line 20**—Enter the total for each of the Columns (b)-(e). When additional schedules are prepared for this Section, annotate accordingly and show the overall totals on this line.

### **Section F. Other Budget Information**

**Line 21**—Use this space to explain amounts for individual direct object-class cost categories that may appear to be out of the ordinary or to explain the details as required by the Federal grantor agency.

**Line 22**—Enter the type of indirect rate (provisional, predetermined, final or fixed) that will be in effect during the funding period, the estimated amount of the base to which the rate is applied, and the total indirect expense.

**Line 23**—Provide any other explanations or comments deemed necessary.

**Instructions and Summary**

Award Number: \_\_\_\_\_  
 Award Recipient: \_\_\_\_\_

Date of Submission: \_\_\_\_\_  
 Form submitted by: Arizona State University  
 (May be award recipient or sub-recipient)

**Please read the instructions on each page before starting.**

**If you have any questions, please ask your DOE contact. It will save you time!**

**On this form, provide detailed support for the estimated project costs identified on the SF-424A form (Budget).**

- The dollar amounts on this page must match the amounts on the associated SF-424A.
- The award recipient and each sub-recipient with estimated costs of \$100,000 or more must complete this form and a SF-424A form.
- The total budget presented on this form and on the SF424A **must include both Federal (DOE), and Non-Federal (cost share) portions**, thereby reflecting **TOTAL PROJECT COSTS** proposed.

• For costs in each Object Class Category on the SF-424A, complete the corresponding worksheet on this form (tab at the bottom of the page).

- All costs incurred by the preparer's sub-recipients, vendors, contractors, consultants and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.

**SUMMARY OF BUDGET CATEGORY COSTS PROPOSED**

(Note: The values in this summary table are from entries made in each budget category sheet.)

CATEGORY	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Total Costs	Project Costs %	(Add comments as needed)
a. Personnel						
b. Fringe Benefits						
c. Travel						
d. Equipment						
e. Supplies						
f. Contractual Sub-recipient FFRDC Vendor						<b>REDACTED EXEMPTION 4</b>
Total Contractual						
g. Construction						
h. Other Direct Costs						
i. Indirect Charges						
Total Project Costs						

**Additional Explanations/Comments (as necessary)**

ASU-GIOS is a subrecipient for the City Phoenix and will serve in the role related to Task 3, Marketing and Education, and Task 5, Monitoring and Evaluation. ASU-GIOS will monitor and evaluate energy consumption in the GRC link the program to social and behavioral change, monitor the overall efficacy of program investments, coordinate with the marketing firm and nrc

state-of-the-art training to the conservation consultants. ASU/GIOS will operate as an independent third-party evaluator, producing formative and summative reports on program strengths and weaknesses. GIOS has an intensive urban-environmental research and teaching portfolio; and through its Sustainable Cities Network shares knowledge, fosters partnerships, and develops and deploys best practices in small- and large-scale energy systems and the design of sustainable neighborhoods.

**PLEASE READ!!!****a. Personnel**

List costs solely for employees of the entity completing this form (award recipient or sub-recipient). All other personnel costs (of subrecipients or other contractual efforts of the entity preparing this) must be included under f, Contractual. This includes all consultants and FFRDCs.

Identify positions to be supported. Key personnel should be identified by title. All other personnel should be identified either by title or a group category. State the amounts of time (e.g., hours or % of time) to be expended, the composite base pay rate, total direct personnel compensation and identify the rate basis (e.g., actual salary, labor distribution report, technical estimate, state civil service rates, etc.).

Add rows as needed. Formulas/calculations will need to be entered by the preparer of this form. Please enter formulas as shown in the example.

Task # and Title	Position Title	Budget Period 1		Budget Period 2		Budget Period 3		Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 1	Time (Hours)	Pay Rate (\$/Hr)	Total Budget Period 2			
1. Generation 2A Receiver Design	EXAMPLE ONLY!!!									
Task 3. Marketing and Education										
Task 5. Monitoring and Evaluation										

<b>REDACTED EXEMPTION 4</b>

<b>REDACTED EXEMPTION 4</b>


Total Personnel Costs

Additional Explanations/Comments (as necessary)

**b. Fringe Benefits**

	Budget Period 1 See below	Budget Period 2 See below	Budget Period 3 See below	Total
Rate applied:				
Total fringe requested:				

REDACTED

EXEMPTION 4

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information. Calculate the fringe rate and enter the total amount in Section B, line 6.b. ("Fringe Benefits") of form SF-424A.

A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is included with this application, and will be provided electronically to the Contracting Officer for this project.  
 \*In the area designated below, identify the full calculations used to derive the total fringe costs. See further information below.

There is not a current, federally approved rate agreement negotiated and available.

When this option is checked, the entity preparing this form shall submit a rate proposal in the format provided at the following website, or a format that provides the same level of information and which will support the rates being proposed for use in performance of the proposed project. Go to <https://www.eere-pmc.energy.gov/forms.aspx> and select PMC 400.2 Sample Rate Proposal. \* In the area designated below, identify the full calculations used to derive the total fringe costs. See further information below.

Additional explanation/comments (as necessary)

REDACTED  
EXEMPTION 4

# Office for Research & Sponsored P Administration

## Facilities & administrative (F&A) costs

On this page:

- Summary of ASU F&A rates • History of ASU F&A rates • F&A rate calculation
- F&A cost pools • Distribution base
- F&A waivers
- Do you need an F&A Waiver? • Charging F&A costs as direct costs

**c. Travel****PLEASE READ!!**

Provide travel detail as requested below, identifying total Foreign and Domestic Travel as separate items. Purpose of travel are items such as professional conference, DOE sponsored meeting, project management meeting, etc. The Basis for Estimating Costs are items such as past trips, current quotations, Federal Travel Regulations, etc.

All listed travel must be necessary for performance of the Statement of Project Objectives.

Purpose of travel	No. of Travelers	Depart From (not required for domestic travel)	Destination (not required for domestic travel)	No. of Days	Cost per Traveler	Basis for Estimating Costs
						Budget Period 1
Domestic Travel						

**REDACTED  
EXEMPTION 4**

Domestic Travel	Budget Period 2	
	Budget Period 1	Budget Period 2 Total

**REDACTED  
EXEMPTION 4**

Domestic Travel	Budget Period 3	
	Budget Period 1	Budget Period 2 Total

**REDACTED  
EXEMPTION 4**

Additional Explanations/Comments (as necessary)

**d. Equipment**

**PLEASE READ!!!**

Equipment is generally defined as an item with an acquisition cost greater than \$5,000 and a useful life expectancy of more than one year. Further definitions can be found at 10 CFR 600 found on the EERE Recipient Resources Forms page at <https://www.eere-pmc.energy.gov/Forms.aspx#regs>.

List all proposed equipment below, providing a basis of cost such as vendor quotes, catalog prices, prior invoices, etc., and briefly justifying its need as it applies to the Statement of Project Objectives. If it is existing equipment, and the value of its contribution to the project budget is being shown as cost share, provide logical support for the estimated value shown. If it is new equipment which will retain a useful life upon completion of the project, provide logical support for the estimated value shown.

For equipment over \$50,000 in price, also include a copy of the associated vendor quote or catalog price list.

Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
			\$0		
<b>Budget Period 3 Total</b>			<b>\$0</b>		
<b>PROJECT TOTAL</b>			<b>\$0</b>		

Additional Explanations/Comments (as necessary)

**e. Supplies****PLEASE READ!!**

Supplies are generally defined as an item with an acquisition cost of \$5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Further definitions can be found at 10 CFR 600 found on the PMC Recipient Resources Forms page at <https://www.eere-pmc.energy.gov/forms.aspx#regs>.

List all proposed supplies below, providing a bases of cost such as vendor quotes, catalog prices, prior invoices, etc., and briefly justifying the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.

Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Budget Period 1	Justification of need
EXAMPLE ONLY!!! Wireless DAS components	10	\$360.00	\$3,600	Catalog price	For Alpha prototype - Task 2.4	
<b>REDACTED EXEMPTION 4</b>						
<b>REDACTED EXEMPTION 4</b>						
<b>Budget Period 1 Total</b>					<b>Budget Period 2</b>	
<b>Budget Period 2 Total</b>						

General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
Budget Period 3					
REDACTED EXEMPTION 4					
PROJECT TOTAL					
Additional Explanations/Comments (as necessary)					

**f. Contractual****PLEASE READ!!**

The entity completing this form must provide all costs related to sub-recipients, vendors, contractors, consultants and FFRDC partners in the applicable boxes below.

**Sub-recipients (partners, sub-awardees):**

For each sub-recipient with total project costs of \$100,000 or more, a separate SF-424A budget justification form must be submitted. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below.

The preparer of this form need only provide further support of the completed sub-recipient budget forms as they deem necessary. The support to justify the budgets of sub-recipients with estimated costs less than \$100,000 may be in any format, and at a minimum should provide what Statement of Project Objectives task(s) are being performed, the purpose/need for the effort, and a basis of the estimated costs that is considered sufficient for DOE evaluation.

**Vendors (includes contractors and consultants):**

List all vendors, contractors and consultants supplying commercial supplies or services used to support the project. The support to justify vendor costs (in any amount) should provide the purpose for the products or services and a basis of the estimated costs that is considered sufficient for DOE evaluation.

**Federal Research and Development Centers (FFRDCs):**

For FFRDC partners, award recipient will provide a Field Work Proposal (if not already provided with the original application), along with the FFRDC labor mix and hours, by category and FFRDC major purchases greater than \$25,000, including Quantity, Unit Cost, Basis of Cost, and Justification. The award recipient may allow the FFRDC to provide this information directly to DOE.

Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

Sub-Recipient Name/Organization	Purpose/Tasks in SOP	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Project Total
EXAMPLE ONLY!!! XYZ Corp.	Partner to develop optimal fresnel lens for Gen 2 product - Task 2.4	\$48,000	\$32,000	\$16,000	\$96,000
	<b>REDACTED</b>				
	<b>EXEMPTION 4</b>				

Sub-Recipient Name/Organization	Purpose/Tasks in SOPS	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Project Total
	<b>REDACTED EXEMPTION 4</b>				
	<b>Sub-total</b>				
Vendor Name/Organization	Product or Service, Purpose/Need and Basis of Cost (Provide additional support at bottom of page as needed)	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Project Total
EXAMPLE ONLY!! ABC Corp.	Vendor for developing custom robotics to perform lens inspection, alignment, and placement (Task 4). Required for expanding CPV module mfg. capacity. Cost is from competitive quotes.	\$32,900	\$86,500		\$119,400
	<b>REDACTED EXEMPTION 4</b>				
FFRDC Name/Organization	Purpose	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Project Total
	<b>REDACTED EXEMPTION 4</b>				
	<b>Total Contractual</b>				
Additional Explanations/Comments (as necessary)					

## g. Construction

**PLEASE READ!!!**

Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a vendor or subrecipient to the award recipient should be entered under f. Contractual.

List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.

Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

**Overall description of construction activities:**

Example Only!! - Build wind turbine platform

General Description	Cost	Basis of Cost	Justification of need
Budget Period 1			
Three days of excavation for platform site EXAMPLE ONLY!!	\$28,000	Engineering estimate	Site must be prepared for construction of platform.
Budget Period 1 Total	\$0	Budget Period 2	
Budget Period 2 Total	\$0	Budget Period 3	

General Description	Cost	Basis of Cost	Justification of need
Budget Period 3 Total	\$0		
PROJECT TOTAL	\$0		

Additional Explanations/Comments (as necessary)

**PLEASE READ!!**

Other direct costs are direct cost items required for the project which do not fit clearly into other categories, and are not included in the indirect pool for which the indirect rate is being applied to this project. Examples are meeting costs, postage, couriers or express mail, telephone/fax costs, printing costs, etc.

Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.

Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

**h. Other Direct Costs**

General description	Cost	Basis of Cost	Justification of need
		Budget Period 1	
		Budget Period 2	
		Budget Period 3	
		Budget Period 4	

**REDACTED  
EXEMPTION 4**

Budget Period 1 Total	Budget Period 2 Total	Budget Period 3 Total	Budget Period 4 Total

**REDACTED  
EXEMPTION 4**

Budget Period 2 Total	Budget Period 3 Total	Budget Period 4 Total	Project Total

**Additional Explanations/Comments (as necessary)**

**i. Indirect Costs**

<b>Indirect Costs</b>				
	Budget Period 1	Budget Period 2	Budget Period 3	Total
Rate applied:				<b>REDACTED</b>
Total indirect costs requested:				<b>EXEMPTION 4</b>

A federally approved indirect rate agreement, or rate proposed supported and agreed upon by DOE for estimating purposes is required if reimbursement of fringe benefits is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed. Calculate the indirect rate dollars and enter the total in the Section B, line 6.j. (Indirect Charges) of form SF 424A.

There is a federally approved indirect rate agreement. A copy is provided with this application and will be provided electronically to the Contracting Officer for this project.

\*In the area designated below, identify the full calculations used to derive the total indirect costs. See further information below.

There is no current, federally-approved indirect rate agreement.

When this option is checked, the entity preparing this form shall submit an indirect cost rate proposal in the format provided at the following website, or in a format that provides the same level of information and which supports the rate(s) being proposed for use in estimating the project. Go to <https://www.eere-pmc.energy.gov/forms.aspx> and select PMC 400.2 Sample Rate Proposal. \*In the area designated below, identify the full calculations used to derive the total indirect costs. See further information below.

**Additional Explanations/Comments (as necessary)**

\*IMPORTANT: In the space provided below (or as an attachment) provide a complete explanation and the full calculations used to derive the total indirect costs. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total). The rates and how they are applied should not be averaged to get one indirect cost percentage. NOTE: The indirect rate should be applied to both the Federal Share and Recipient Cost Share. ASU has a federally negotiated indirect cost rate of 52.5%, applied to directs with the exception of equipment over \$5K, participant costs, tuition remission, and subcontract costs over \$25K.

**REDACTED**  
**EXEMPTION 4**

## Cost Share

### **PLEASE READ!!!**

A detailed presentation of the cash or cash value of all cost share proposed for the project must be provided in the table below. Identify the source & amount of each item of cost share proposed by the award recipient and each sub-recipient or vendor. Letters of commitment must be submitted for all third party cost share (other than award recipient).

Note that "cost-share" is not limited to cash investment. Other items that may be assigned value in a budget as incurred as part of the project budget and necessary to performance of the project, may be considered as cost share, such as: contribution of services or property; donated, purchased or existing equipment; buildings or land; donated, purchased or existing supplies; and/or unrecovered personnel, fringe benefits and indirect costs, etc. For each cost share contribution identified as other than cash, identify the item and describe how the value of the cost share contribution was calculated.

Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include private, state or local Government, or any source not originally derived from Federal funds. Documentation of cost sharing commitments must be provided, if not already provided with the original application and they have not changed since its submission.

Fee or profit will not be paid to the award recipients or subrecipients of financial assistance awards. Additionally, foregone fee or profit by the applicant shall not be considered cost sharing under any resulting award. Reimbursement of actual costs will only include those costs that are allowable and allocable to the project as determined in accordance with the applicable cost principles prescribed in 10 CFR 600.127, 10 CFR 600.222 or 10 CFR 600.317. Also see 10 CFR 600.318 relative to profit or fee.

Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

Organization/Source	Type (cash or other)	Cost Share Item	Budget	Budget	Total Project
			Period 1 Cost Share	Period 2 Cost Share	Period 3 Cost Share
ABC Company <b>EXAMPLE ONLY!!</b>	Cash	Project partner ABC Company will provide 40 PV modules for product development at 50% off the retail price of \$680	\$13,600		\$13,600
					\$0
					\$0
					\$0
					\$0
					\$0
					\$0

Organization/Source	Type (cash or other)	Cost Share Item	Budget			Total Project Cost Share				
			Period 1 Cost Share	Period 2 Cost Share	Period 3 Cost Share					
						\$0				
						\$0				
						\$0				
						\$0				
						\$0				
		Totals	\$0	\$0	\$0	\$0				
<b>REDACTED EXEMPTION 4</b>		<b>Cost Share Percent of Award:</b>	<b>0.0%</b>							
<b>Total Project Cost:</b>										
Additional Explanations/Comments (as necessary)										

## PMC123.1 - Budget Justification for SF 424A Budget

## Instructions and Summary

Award Number: \_\_\_\_\_  
 Award Recipient: \_\_\_\_\_

Date of Submission: 14-Dec-09  
 Form submitted by: Denise Resnik & Associates  
 (May be award recipient or sub-recipient)

**Please read the instructions on each page before starting.  
 If you have any questions, please ask your DOE contact. It will save you time!**

**On this form, provide detailed support for the estimated project costs identified on the SF-424A form (Budget).**

- The dollar amounts on this page must match the amounts on the associated SF-424A.
- The award recipient and each sub-recipient with estimated costs of \$100,000 or more must complete this form and a SF-424A form.
- The total budget presented on this form and on the SF424A **must include both Federal (DOE), and Non-Federal (cost share) portions**, thereby reflecting **TOTAL PROJECT COSTS** proposed.
- For costs in each Object Class Category on the SF-424A, complete the corresponding worksheet on this form (tab at the bottom of the page).
- All costs incurred by the preparer's sub-recipients, vendors, contractors, consultants and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.

**SUMMARY OF BUDGET CATEGORY COSTS PROPOSED**  
 (Note: The values in this summary table are from entries made in each budget category sheet.)

CATEGORY	Budget Period 1 Costs	Budget Period 2 Costs	Budget Period 3 Costs	Total Costs	Project Costs %	Comments
a. Personnel						(Add comments as needed)
b. Fringe Benefits						
c. Travel						
d. Equipment						
e. Supplies						
f. Contractual						
Sub-recipient						
FFRDC						
Vendor						
Total Contractual						
g. Construction						
h. Other Direct Costs						
i. Indirect Charges						
Total Project Costs						

**Additional Explanations/Comments (as necessary)**

\$175/hour is Denise Resnik & Associates standard billable hourly rate that includes professional salaries, fringe benefits, overhead. This rate is applied consistently across all clients.