DOE/EA-0513

Approaches for Acquiring Energy Savings in Commercial Sector Buildings

Environmental Assessment

September 1991

U. S. Department of Energy
Bonneville Power Administration

DISCLAIMER

DOE/EA--0513

DE92 002248

ENVIRONMENTAL ASSESSMENT

APPROACHES FOR ACQUIRING ENERGY SAVINGS IN COMMERCIAL SECTOR BUILDINGS

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APPROACHES FOR ACQUIRING ENERGY SAVINGS IN COMMERCIAL SECTOR BUILDINGS

ENVIRONMENTAL ASSESSMENT

1.0 INTRODUCTION

Bonneville Power Administration (Bonneville) is proposing to use several diverse approaches to purchase or acquire energy savings from commercial sector buildings regionwide. In the past, Bonneville has offered centrally designed energy savings programs primarily to its utility customers. Under these proposed approaches, Bonneville would permit outside entities such as utilities, states, private developers, or other similar groups to develop, design, and offer energy savings programs for purchase by Bonneville. The focus of this environmental assessment (EA) is on the potential effects of energy-efficient conservation measures (ECMs) that could be proposed by outside entities for purchase by Bonneville.

2.0 NEED FOR ACTION

The Pacific Northwest Electric Power Planning and Conservation Act of 1980 (the Northwest Power Act -- P.L. 96-501) authorized Bonneville to invest in cost-effective energy conservation measures and renewable sources of energy. This was necessary to help assure that the Pacific Northwest would have an adequate supply of electricity in the coming years. Over the past decade, there has been an increasing demand for additional power to serve rapidly growing loads in the region. Bonneville must maintain the ability to match these load demands with available resources.

The surplus energy available in the region has been nearly depleted. The regional power system is now at load/resource balance, and an energy deficit could occur in the future if demand for electricity continues to grow and energy conservation is not aggressively pursued. The commercial sector is the fastest growing sector in the region in terms of energy consumption and accounts for approximately 25 percent of Bonneville's firm load. There is a regionwide consensus that an accelerated program of acquiring energy savings in the commercial sector is necessary.

3.0 ALTERNATIVES

3.1 NO ACTION

Under this alternative, an accelerated program of acquiring energy savings in the commercial sector would not be implemented, which would adversely affect Bonneville's ability to meet the growing demand for power. The additional commercial sector megawatt savings known to be available in the region probably would not be captured.

The No Action alternative would be inconsistent with the Northwest Power Act which stipulates that Bonneville meet its obligation to serve load, first and foremost, by acquiring cost-effective energy savings.

3.2 PROPOSED ACTION

Throughout the 1980's, Bonneville responded to the need to conserve energy in the commercial sector by designing and implementing conservation pilot programs. These programs tested methods of acquiring energy savings through financial incentives to encourage installation of ECMs in commercial buildings.

The region is now experiencing rapid growth in new construction, remodeling, and retrofitting activity in the commercial sector. This presents Bonneville with an opportunity to encourage cost-effective, energy-efficient resource development. Bonneville is developing several mechanisms which will encourage utilities and others to design and offer regional conservation programs. Three proposed approaches to acquire savings in the commercial sector are the Targeted Acquisition Program, Billing Credits, and Competitive Acquisitions.

A brief program description of each proposed approach for the commercial sector follows:

Targeted Acquisition Program - This proposed conservation program would be designed and operated by utilities and other entities. The objective of the program would be to acquire energy savings from commercial buildings (i.e., new, existing, remodels, and retrofits) and non-process portions of industrial facilities. Utilities would have the opportunity to offer incentives to their customers to encourage installation of environmentally sound, regionally cost-effective measures. Bonneville would then purchase verified energy savings that result from this program.

Billing Credits - This program is intended to encourage Bonneville's utility customers to develop conservation programs to meet their own loads. A utility would receive a billing credit only if the utility customer's net load requirements on Bonneville were reduced.

Competitive Acquisitions - This proposed pilot program is designed to test competitive acquisition of energy savings. This competitive process will enable Bonneville to systematically solicit, evaluate, and select resource proposals that are offered for purchase. This competitive approach would be open to a wide range of sponsors (e.g., utilities, Federal, state, and local government entities, and private developers). The diversity of the participants and types of resources eligible in this acquisition process would help assure that all possible energy savings would be acquired.

These three new conservation approaches are expected to save approximately 32 average megawatts (aMW) in the commercial sector between now and 1997. Bonneville's 1990 Resource Program estimates cumulative energy savings from all conservation sectors will total 293 aMW between 1990-1997 . The three new commercial conservation approaches outlined in this environmental assessment would constitute slightly over 10 percent of those total savings.

Most of the savings to be acquired will be achieved by the commercial sector installing ECMs which fall into the following categories. A complete list of ECMs is included in Attachment I.

- Lighting Systems
- Power Systems
- Building Envelope
- HVAC Systems
  - Heating/Air Conditioning
  - Ventilation
  - Refrigeration
- Domestic Hot Water Systems

4.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

The potential environmental impacts associated with installing ECMs in the commercial sector were first addressed in an Environmental Assessment entitled, "Energy Conservation Opportunities in Commercial Sector Facilities in the Pacific Northwest" (DOE/EA-0187) dated August 1982. Since that time, additional environmental review documents for commercial sector conservation activities have been prepared. A complete list of those documents is included in Attachment II.

As a result of these environmental reviews, Bonneville has developed specific environmental requirements for ECMs installed in new and existing commercial buildings. These requirements were first analyzed in a Memorandum-to-File (MTF) approved by the Assistant Administrator for Conservation on October 18, 1984. This MTF concluded that clearly no significant environmental effects would result from installing ECMs in the commercial sector if these environmental requirements were followed.

Bonneville's Commercial Environmental Requirements have been updated periodically since then to incorporate the evolution in environmental regulations and new information available regarding potential environmental impacts of conservation technologies and techniques. All participants implementing these new approaches for acquiring energy savings in the commercial sector will be required to follow the environmental requirements which are summarized below.

4.1 INDOOR AIR QUALITY (IAQ)

Environmental Concern: Various pollutants are released within any commercial building on a continuing or intermittent basis. Indoor pollutants can originate from objects within a building, from building materials, from indoor activities of building occupants, or from

building occupants themselves. Outdoor air pollutants enter buildings through mechanical ventilation systems or through infiltration. A reduction in the flow of outside air into a building may cause these pollutants to accumulate at levels that could cause health problems for building occupants.

Program Requirement: The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) has developed ASHRAE Standard 62-89, "Ventilation for Acceptable Indoor Air Quality." This standard is the new heating, ventilating, and air-conditioning (HVAC) nationwide industry consensus standard for ventilation air in commercial buildings.

Bonneville has incorporated this standard into its Commercial Environmental Requirements for mechanically ventilated buildings. These requirements provide procedures which must be followed to assure compliance with the standard. For naturally ventilated buildings, ventilation rates must be in compliance with local building codes. At a minimum, the building must meet the Uniform Building Code ventilation requirements. Bonneville's IAQ procedures stipulate that apartments must be monitored for radon prior to installing ECMs which could affect air quality. IAQ information is also provided to occupants of those apartments where ECMs affecting ventilation are installed.

ASHRAE Standard 62 also includes appropriate ventilation rates for buildings containing swimming pools. Any Bonneville funded commercial project which includes a swimming pool must comply with the ventilation rates for the pool and surrounding deck area.

The indoor air quality guidelines outlined in the Commercial Environmental Requirements address both Building Envelope and HVAC System ECMs.

4.2 LIGHTING

Environmental Concern: High pressure sodium (HPS) lamps are an extremely bright source of light. They can offer a highly efficient and long operating life in carefully selected indoor applications. Although lighting technology is rapidly changing, there are still some environmental concerns associated with the use of HPS indoors. They include glare, stroboscopic ("flicker") effect, and color distortion. Mitigation techniques are available to reduce or eliminate these environmental effects. These mitigation techniques are incorporated in the Commercial Environmental Requirements. Both low pressure sodium (LPS) and HPS produce some level of monochromatic light (yellow or gold tint). However, LPS is much worse in distorting color, and is not suitable for indoor use.

Program Requirement:

Glare: Glare can be a problem when using HPS lighting because of the small size of the lamp and its extreme brightness. Appropriate luminaire shielding must be utilized when HPS lighting is used indoors. Luminaires must be mounted above the normal line of sight. When mounted less than 20 feet above the work plane, either a refractor lens must be used or the luminaire must be specifically designed for mounting at low heights. Other types of supplementary task lighting must be used to help reduce or eliminate reflected glare.

Color Distortion: Earthtone colors with a dull or matte finish can be used on surfaces to improve color rendition. However, if critical, color-dependent tasks are involved, an HPS lighting system should not be utilized. Examples of such tasks include color coding in warehouse operations or in some machine shop operations. If warning or exit signs are used in the work area, they must be illuminated independently by other sources such as incandescent, fluorescent, or metal halide lamps.

Stroboscopic (Flicker) Effect: HPS lighting can produce a cyclic variation in light output. Rapidly moving objects viewed in this light may appear to be stationary. In work areas where flicker could present a safety hazard, HPS lighting must utilize three-phase power with luminaires that produce overlapping illumination. By wiring each adjacent luminaire on a separate phase, the stroboscopic problem will be reduced or eliminated.

4.3 DISPOSAL OF LIGHT BALLASTS CONTAINING POLYCHLORINATED BIPHENYLS (PCBs)

Environmental Concern: Prior to 1979, PCBs were widely used as coolants in electrical equipment, including the capacitors used in fluorescent light fixtures. The capacitors in those fluorescent ballasts contain 1-2 ounces of near pure PCBs. If the ballast fails and the capacitor breaks open, the PCB oil could leak.

Program Requirement: Disposal of non-leaking ballasts containing PCBs is not Federally regulated. However, some states (such as Washington) have enacted their own Dangerous Waste Regulations governing the disposal of any PCB material. In addition, EPA Region 10 has a policy that anyone disposing of five or more capacitors per year may not send them to a municipal landfill. EPA's policy in BPA's service territory, pertains to Oregon, Washington, and Idaho. They have also published a fact sheet intitled "PCB's in Fluorescent Light Fixtures." It contains basic information on PCBs and guidelines for handling and disposing of them.

BPA requires that all Federal, State, and local regulations governing PCB ballast disposal must be followed. In addition, we will continue to work closely with EPA Region 10 and our customers to implement a consistent PCB disposal policy for the region.

Each Bonneville Area/District office has copies of the EPA fact sheet. Contractors are instructed to provide a copy to building owners who are disposing of ballasts which may contain PCBs.

4.4 ASBESTOS

Environmental Concern: Asbestos fibers are very small (less than 10 microns long), very strong and very resistant to heat and chemicals. Since they are so resistant, they are also extremely stable in the environment. They do not evaporate into the air, dissolve in water, or disintegrate over time. Intact and undisturbed asbestos materials do not pose a health risk. However, the adverse health effects resulting from exposure to airborne asbestos fibers are well documented. The current EPA classification for asbestos is "A; human carcinogen."

Program Requirement: Bonneville will not fund removal and disposal of asbestos material in any commercial project. If building owners decide to disturb and remove asbestos, it is their responsibility to comply with all Federal, state, and local waste disposal procedures and regulations and assume all associated costs prior to installing a Bonneville-funded ECM.

4.5 UREA FORMALDEHYDE FOAM INSULATION (UFFI)

Environmental Concern: Urea formaldehyde foam insulation (UFFI) contains gaseous material and releases residual-free formaldehyde as it ages. This may contribute to adverse health effects for building occupants.

Program Requirement: Bonneville does not permit the use of UFFI in either new construction or existing building retrofits since formaldehyde outgassing can occur during installation and over time. Other insulation materials must be used.

4.6 TOXIC TRANSFER FLUIDS

Environmental Concern: Some types of commercial ECMs (i.e., solar domestic hot water systems or water source heat pumps) require the use of transfer fluids. Toxic transfer fluids could contaminate the groundwater or soil if leaks or accidental discharges occur.

Program Requirement: Bonneville does not permit the use of any toxic transfer fluids. Non-toxic mixtures must be substituted. Appropriate state or local code officials must approve the type of transfer fluid which will be used.

4.7 PROJECTS INVOLVING SUBSURFACE RESOURCES

Environmental Concern: Some types of projects (e.g., direct application geothermal or groundwater heat pumps) may involve the use of subsurface resources. Care must be taken to avoid any adverse impact on water quality or ground use.

Program Requirement: There are various Federal, state, and local regulations governing the use of subsurface resources. Projects which involve use of subsurface resources are reviewed by Bonneville on a case-by-case basis. Site specific information such as a description of the project, impacts on land and water supplies, effluent disposal methods, and letters of coordination with other Federal, state, and local agencies must be reviewed and approved by Bonneville prior to proceeding with any ECM installation.

4.8 HISTORIC PRESERVATION

Environmental Concern: Some ECMs installed in commercial buildings over 45 years old potentially could alter the historic significance of the building.

Program Requirement: A review procedure for buildings classified as historic properties (or eligible for consideration as historic) must be followed prior to installing the ECM. In 1983, Bonneville, the Advisory Council on Historic Preservation, and the State Historic Preservation Offices in Bonneville's service territory signed a Programmatic Memorandum of Agreement (PMOA). All energy conservation projects must comply with the PMOA to satisfy the National Historic Preservation Act (16 U.S.C. 470) and its implementing regulations, "Protection of Historic and Cultural Properties" (36 CFR Part 800). This PMOA lists a number of exempt conservation ECMs which can be installed in buildings over 45 years old without further consultation with the State Historic Preservation Officer (SHPO). If non-exempt measures are to be installed, the SHPO must be consulted.

4.9 POWER SYSTEMS

Some examples of ECMs categorized as power systems include use of variable speed motors and drives, installing energy efficient motors, and energy management systems. Installation of these types of measures is in accordance with conventional practice which is routinely employed in the building industry. The installation is also governed by state and local building and safety codes. Installing power systems measures will not introduce any environmental hazards into the building environment.

4.10 DOMESTIC HOT WATER SYSTEMS

Retrofits in this category are generally designed to reduce electricity expenditures for heating water, to reduce energy consumption of pumps and motors, or to bring service as close as feasible to actual demand. Examples of ECMs in this category include insulating hot water storage tanks and piping, installing flow restrictors, installing timeclocks to turn off water heating during unoccupied periods, use of a heat pump water heater system, etc. All ECM installations must be in compliance with state and local building and safety codes. No environmental impacts will result to the building environment by installing these types of measures.

5.0 CONCLUSION

Bonneville has carefully considered the potential environmental impacts associated with installation of currently known ECMs in new and existing commercial buildings, and has implemented specific requirements to minimize those impacts. These Commercial Environmental Requirements would apply to the three proposed conservation approaches outlined in this environmental assessment.

The cumulative energy savings from these proposed commercial programs will have a positive impact on the region. These savings will help reduce the region's dependence on other resource types needed to meet Bonneville's load requirements. However, the savings are not large enough to negate or replace other needed resources or other conservation programs.

To summarize, the following environmental requirements have been incorporated in all BPA commercial conservation programs, including this proposal:

- All program participants are required to comply with established environmental requirements.
- ASHRAE Standard 62-89 has been adopted by Bonneville as the required ventilation standard to improve indoor air quality in commercial buildings.
- Specific guidelines for installing HPS lighting indoors is provided to program participants.
- Guidance regarding disposal of fluorescent light ballasts which may contain PCBs is routinely provided to building owners.
- Bonneville will not fund removal and disposal of asbestos material.
- The use of urea formaldehyde foam insulation is not permitted in either new construction or in existing building retrofits.

- The use of toxic transfer fluids is not permitted in any ECM.
- All commercial buildings over 45 years old will be reviewed in accordance with Bonneville's PMOA with the Advisory Council on Historic Preservation and the State Historic Preservation Offices.
- Building owners are required to comply with all Federal, state, and local building and safety codes and environmental regulations.

6.0 AGENCIES/PERSONS CONSULTED

Environmental Protection Agency, Region 10, Seattle, Washington.

ATTACHMENT I
Commercial Sector Energy Conservation Measures

I.1 LIGHTING SYSTEMS

- Remove lamps and fixtures; disconnect ballasts and leave in-place
- Install efficient fixtures including heat recovery fixtures, T8, and parabolic reflectors (remove old fixtures)
- Install efficient ballasts, including electromagnetic ballasts, and high frequency electronic ballasts
- Install efficient lamps - replace incandescent or low efficiency mercury vapor lamps with high pressure sodium, low pressure sodium, metal halide, T8, or fluorescent or low watt fluorescent lamps
- Install energy efficient exterior lighting Use only necessary illumination levels through microprocessor control
- Use natural light and daylighting, including perimeter dimming systems
- Install automatic dimming control systems
- Install photocells or timeclocks to control exterior lighting
- Install switching for selective control illumination
- Install occupancy sensors
- Install corridor light timers
- Install self-powered exit lights
- Install low voltage (tungsten) lighting

I.2 POWER SYSTEMS

- Disconnect lightly loaded transformers, leave in-place
- Replace transformers (economic replacement criteria)
- Convert primary distribution system to higher voltages
- Replace (resize) oversized motors
- Use high efficiency motors and transformers (replacement)
- Use variable speed motors and drives for pumps
- Use variable speed motors and drives for fans
- Install solid-state motor drives on elevators
- Install demand-type elevator controls
- Install energy management system (EMS)

I.3 BUILDING ENVELOPE[a]

- Install wall insulation
- Install roof insulation
- Install ceiling insulation
- Install floor insulation
- Install foundation (crawl space) insulation
- Install slab perimeter insulation
- Reduce space load from outside air infiltration (caulk, weatherstrip)
- Install window and skylight insulation (curtains)
- Install storm windows
- Install sash-mounted storm windows
- Install low-E glass
- Install multiple glazed windows
- Reduce solar heat gain with solar film, window tints, overhangs, awnings, louvers or other screening/shading devices
- Install storm doors
- Install double pane sliding doors
- Install screen doors
- Replace existing doors with insulated doors
- Enclose loading docks with shelters and seals
- Install vestibules to reduce infiltration/exfiltration
- Seal vertical shafts (elevators, stairwells) to reduce in/exfiltration
- Install air curtains
- a = Assume that new buildings would be designed to provide the prescribed ventilation rate.

I.4 HVAC SYSTEMS

Heating/Air Conditioning

- Install automatic condenser cleaning
- Increase evaporator and/or decrease condenser water temperatures and modify controls
- Replace air-cooled condenser with cooling tower
- Install spot cooling
- Install earth cooling tubes
- Install roof spray system
- Install high efficiency air-conditioning unit
- Install chiller economizer (water-side)
- Install economizer (air-side)
- Install air-side heat recovery system (ventilation air tempering), including packaged systems)
- Isolate off-line chillers and cooling towers
- Prevent simultaneous use of heating/cooling via automatic controls
- Reset hot deck temperature via automatic controls
- Reset cold deck temperature via automatic controls
- Zone optimize reheat systems
- Use duty cycling for fan control
- Install dead band thermostats
- Install warm-up cycle controls/optimum start
- Install automatic night setback/set up
- Reduce pump energy by reducing resistance and flow rates
- Insulate ducts
- Insulate piping
- Replace forced air heating system with (spot) radiant heaters
- Replace resistance heating with heat pump
- Install air/ground/water source heat pumps
- Install pool heat recovery
- Install high efficiency air handler
- Convert existing constant volume air distribution system to a variable air volume (VAV) system
- Install energy management system to control HVAC

Ventilation

- Install CO_2-controlled ventilation
- Install CO-controlled covered parking ventilation
- Automatically reduce ventilation during unoccupied periods
- Reduce minimum outside air
- Recirculate exhaust air using activated carbon filters
- Install vortex hoods for restaurants
- Use separate make-up air for exhaust hoods
- Employ evaporative cooling of outdoor air
- Employ desiccant dehumidification
- Reduce energy consumption for fans by reducing air flow rates and resistance to air flow
- Install high efficiency fans with larger ductwork
- Install dual speed fans
- Install attic ventilation
- Install low leakage dampers
- Install an air destratification system (ceiling fans)
- Install outside air reset controls
- Automatically reduce or minimize outside air intake by control modifications

Refrigeration

- Reset chilled water temperature
- Chiller optimization
- Optimize defrosting control through new controls
- Optimize capacity control via new controls
- Increase condensing unit efficiency
- Optimize cooling tower control (i.e., coolant/air flow modulation) via new controls
- Install variable speed chiller motor
- Install high efficiency chiller
- Install timeclocks on circulating pumps
- Install efficient compressors
- Reduce heat gains to refrigerated space
- Install efficiency-of-use improvements (strip curtains, etc.)
- Employ heat recovery from exhaust air
- Install thermal storage (ice, chilled water, hot water)
- Install variable speed drive (VSD) on pumps
- Install floating condenser head pressure control

I.5 DOMESTIC HOT WATER SYSTEMS

- Insulate hot water storage tank with wraps, bottom boards, convection loops
- Insulate hot water piping
- Install flow restrictors to limit water use
- Install chemical dishwashing system
- Use heat recovery systems, including packaged systems, to heat water
- Replace central system with local, tankless, point-of-use heating units to eliminate storage and/or separate summer dehumidification
- Use a heat pump water heater system
- Install a timer on electric systems
- Turn off domestic hot water pumps during off hours
- Install a timeclock to turn off water heater during unoccupied periods
- Install circulating pump control
- Use solar water heating systems

ATTACHMENT II

Environmental Review Documents

Chlorofluorocarbon Environmental Issues Related to Conservation Acquisition in Commercial Buildings; Battelle Pacific Northwest Laboratory, PNL-7503, UC-350, September 1990

Polychlorinated Biphenyls in Commercial Buildings; Battelle Pacific Northwest Laboratory, PNL-7506, UC-350, September 1990

Health Effects Associated with Energy Conservation Measures in Commercial Buildings, Volume 1: Summary; Battelle Pacific Northwest Laboratory, PNL-7505 Volume 1, UC-350, September 1990

Health Effects Associated with Energy Conservation Measures in Commercial Buildings, Volume 2: Review of the Literature; Battelle Pacific Northwest Laboratory, PNL-7505 Volume 2, UC-350, September 1990

Indoor Air Quality Issues Related to the Acquisition of Conservation in Commercial Buildings; Battelle Pacific Northwest Laboratory, PNL-7504, UC-350, September 1990

Environmental Requirements - Commercial Conservation Programs - New and Existing Buildings, November 1990

Summary of Commercial Conservation Programs Environmental Issues and Program Consistency, Battelle Pacific Northwest Laboratory, PNL-6982, June 1989

Indoor Air Quality in Commercial Buildings, Volumes 1 and 2, Lawrence Berkeley Laboratory, Applied Science Division, December 1987

Environmental Assessment in Support of Proposed Interim Energy Conservation Standards for New Commercial and Multi-family Highrise Residential Buildings, DOE/CE-0166, November 1986

Existing Conservation Programs or Projects in Commercial and Institutional Buildings Will Clearly Have No Significant Effects, U.S. Department of Energy, Bonneville Power Administration, October 18, 1984

Brief Memorandum Documenting that the Proposed Ventilation Rates for the BPA Commercial/Institutional Buildings Program Will Clearly Have No Significant Impact on the Human Environment, U.S. Department of Energy, Bonneville Power Administration, February 21, 1984

Programmatic Memorandum of Agreement Between Bonneville Power Administration, the Advisory Council on Historic Preservation, and Eight Service Territory State Historic Preservation Offices, August 23, 1983

Environmental Assessment of Energy Conservation Opportunities in Commercial-Sector Facilities in the Pacific Northwest, DOE/EA-0187, August 1982

Energy Conservation Opportunities in Commercial Facilities in the Pacific Northwest: Finding of No Significant Impact, U.S. Department of Energy, Bonneville Power Administration, August 1982

U.S. DEPARTMENT OF ENERGY
Bonneville Power Administration

Finding of No Significant Impact Approaches for Acquiring Energy Savings in Commercial Sector Buildings

AGENCY: Bonneville Power Administration (BPA), DOE

ACTION: Finding of No Significant Impact (FONSI) for BPA's Alternative Approaches for Acquiring Energy Savings in Commercial Sector Buildings.

SUMMARY: BPA proposes to encourage utilities and others to design and offer regional conservation resources to acquire savings in the commercial sector through the following three approaches:

Targeted Acquisition Program - Utilities and other entities design and operate programs to acquire energy savings from commercial buildings and non-process portions of industrial facilities. Utilities may offer incentives to their customers to encourage installation of energy conservation measures (ECMs) and BPA will then purchase the verified energy savings that result from the program.

Billing Credits - Utilities will be compensated for the difference between the cost of the additional commercial sector conservation resource developed and the cost of BPA's firm resources, if the customer's net load requirements on BPA are reduced.

Competitive Acquisitions - A wide range of sponsors may compete to provide commercial sector conservation resources that are currently not reached through other BPA programs.

The purpose of this proposal is to meet the increasing demand for additional power to serve rapidly growing loads in the region. BPA must maintain the ability to match these load demands with available resources. The surplus energy available in the region has been nearly depleted. The regional power system is now at load/resource balance, and an energy deficit could occur in the future if demand for electricity continues to grow and energy conservation is not aggressively pursued. The commercial building sector is the fastest growing sector in the region in terms of energy consumption and accounts for approximately 25 percent of BPA's firm load. There is a regionwide consensus that an accelerated program of acquiring conservation resources in the commercial sector is necessary.

The No Action alternative would be inconsistent with the Northwest Power Act which stipulates that Bonneville meet its obligation to serve load, first and foremost, by acquiring cost-effective energy savings. The additional commercial sector megawatt savings known to be available in the region would probably not be captured. Thus, losing a conservation resource that has been identified as having little or no environmental impacts (EA, page 3).

Supplementary Information:

An environmental assessment (EA) on BPA's proposal was prepared which evaluated the environmental effects associated with indoor air quality from changes to the heating, ventilating, and air conditioning systems; different types of lighting; disposal of fluorescent light ballasts possibly containing polychlorinated biphenyls; asbestos disturbance; use of area formaldehyde foam insulation; use of toxic transfer fluids; development of subsurface resources for heating or cooling; and historic sites. BPA has considered these potential environmental impacts associated with installation of currently known ECMs in new and existing commercial buildings in numerous environmental review documents in the past. These environmental documents are referenced in the EA.

As a result, BPA has developed specific program requirements to provide for proper installation of measures or avoidance of the potential effects described above.

* All program participants are required to comply with established environmental requirements (EA, page 3).
* The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Standard 62-89 has been adopted by BPA as the required ventilation standard to improve indoor air quality in commercial buildings. In addition, IAQ information is provided to occupants of apartments where ECMs affecting ventilation are installed (EA, pages 3-4).

* Specific guidelines for installing HPS lighting indoors is provided to program participants (EA, pages 4-5).
* BPA routinely provides building owners with information developed by EPA regarding disposal of fluorescent light ballasts containing PCBs. They are also required to follow all Federal, state, and local regulations governing disposal. In addition, BPA is continuing to work closely with EPA and BPA customers to implement a consistent ballast disposal policy for the entire region. (EA, page 5).
* BPA will not fund removal and disposal of asbestos material (EA, pages 5-6).
* The use of area formaldehyde foam insulation is not permitted in either new construction or in existing building retrofits (EA, page 6).
* The use of toxic transfer fluids is not permitted in any ECM (EA, page 6).
* All commercial buildings over 45 years old will be reviewed in accordance with BPA's Programmatic Memorandum of Agreement (PMOA) with the Advisory Council on Historic Preservation and the State Historic Preservation Offices (EA, page 7).
* Building owners are required to comply with all Federal, state, and local building and safety codes and environmental regulations.
* Projects that involve subsurface resources are to be reviewed by Bonneville on a case-by-case basis and must comply with Federal, state, and local regulations governing subsurface resources.

By adhering to the requirements outlined in this EA, no aspect of the three alternative approaches for acquiring energy savings in the commercial sector will have a significant impact on the quality of the human environment.

PUBLIC AVAILABILITY: Copies of the Approaches for Acquiring Energy Savings in Commercial Sector Buildings EA, April 1991, and this FONSI can be requested from the Environmental Coordinator for Energy Resources at the address shown below.

FOR FURTHER INFORMATION CONTACT: Mr. Charles Alton, Environmental Coordinator for Energy Resources, Bonneville Power Administration, P.O. Box 3621 - RM, Portland, Oregon 97208; telephone 503-230-5878.

DETERMINATION: The proposed action is not a major Federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement is not required and the Department is issuing this FONSI.

Issued in Washington, DC, on Sept 25, 1991

Paul L. Ziemer, Ph.D.
Assistant Secretary
Environment, Safety and Health

VS5-RM-2841i

END

DATE FILMED

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