David Baylon

David Baylon is a past principal and president at Ecotope, Inc. He has been active in the field of energy conservation and energy efficiency since 1975. He has authored or coauthored many of the key studies that have informed the Pacific Northwest's approach to energy conservation in both the residential and commercial building sectors. This work resulted in several hundred reports, technical papers and position papers on the use of energy efficiency as a utility resource.

In 1980 Mr. Baylon began review of residential construction. While this was focused on the Pacific Northwest it was also used in the BPS program administered by the LBNL. This work culminated in an Ecotope project to assess the long-term conservation potential in the residential sector that was used by the Northwest Power Planning council (later the NPCC) to evaluate the potential conservation resource to meet the demands of the PNW regional power grid and load growth. The work became the Northwest Model Conservation Standards which were later codified in both the Washington and Oregon energy codes. Over the next 3 decades Mr. Baylon was a principal in the development, four field reviews of the region's manufactured housing demand-side management (DSM) programs, three regional multi-family building characterizations projects, three residential duct sealing and performance projects, two heat pump field evaluations, and several field evaluations of BPA residential initiatives in the 1980s.

Since 1987, Mr. Baylon has managed several reviews of commercial energy codes and standards in the Pacific Northwest, including reviews of residential and commercial energy codes for the Bonneville Power Administration (BPA), Northwest Power and Conservation Council, the State of Oregon, and the State of Washington. This work included field evaluation for five commercial baseline projects and a audit level review of over 600 new commercial building throughout the Pacific Northwest. This work became the basis for commercial building design practice baseline and commercial building energy code compliance over the next 25 years.

Mr. Baylon retired from Ecotope in 2018 and has since been involved with several independent consulting contracts.

Relevant Recent Experience

Member-(2018-present)
Northwest Power and Conservation Council (NPCC), Regional Technical Forum (RTF): Serves as a voting member on the RTF and provide review of technical development products used to evaluate energy efficiency measures for inclusion in the Northwest's power planning and utility program design. Prior to joining the RTF as a voting member, he participated in the RTF as a corresponding member providing technical consulting on various efficiency measures and sector characterization.

Member-(1997-present)
Washington State Building Code Council, Energy Technical Advisory Group. Authored and reviewed code proposals for both the Commercial and Residential WSEC including the DOAS code initiative sponsored by NEEA. Most recently developed a carbon accounting system integrated with the Commercial performance code and the residential options tables.

Consultant – (2021-Present)
Provided consulting and technical review to WA Department of Commerce, Bonneville Power Administration, and other utilities.

Consultant – (2017-2020)

Provided independent technical consulting and advise on projects including Ecotope projects commercial building code compliance (NEEA), low-rise multifamily characterization and code development (USDOE), and Residential Energy Code for the State of Washington

Principal – (2014-2016)

Commercial Energy Code Compliance Pilot Study, for the ***Northwest Energy Efficiency Alliance***. Provided overall technical direction for all project tasks, including sample design and the integration field surveys of commercial buildings and the compliance levels with local and national energy codes. The study designed an approach to commercial building code assessment which is now in progress in the four states of the Pacific Northwest region.

Consultant – (2014-2018)

Provided independent technical consulting and advise for Ecotope's project assessing the carbon impact of the Seattle building stock for the ***City of Seattle, Office of Sustainability and Environment (OSE)***. Provided advice on population assessment, energy, and carbon impact of the entire Seattle building sector.

Principal – (2011-2014)

Single Family and Multi-family Building Stock Assessment, for ***Seattle City Light***. Provided overall technical direction for all project tasks, including sample design and the integration of about 110 multi-family building audits and 140 single family residences including billing analysis with the RBSA regional residential survey.

Principal – (2010-2013)

Residential Building Stock Assessment, for the ***Northwest Energy Efficiency Alliance***. Provided overall technical direction for all project tasks, including sample design, audit protocol, field monitoring, data cleaning, database development, and overall technical summaries. Project included 1725 single family residential audits (site built and manufactured homes) and 120 multi-family building audits conducted in 2011 and 2012.

Principal – (2010-2011)

Evaluation of residential and commercial conservation programs including total and realized savings for the single-family measure program, the low-income weatherization programs, the multifamily program, and the commercial/industrial custom efficiency program. ***Avista Utilities***.

Principal – (2009-2014)

Ductless Heat Pump Impact and Process Evaluation for the ***Northwest Energy Efficiency Alliance***. Provided overall technical direction for all project tasks, including field monitoring, lab testing, billing analysis, cost effectiveness analysis, and market progress evaluation. The project reviewed installation and billing data from about 4000 participants across the Pacific Northwest. In addition, a detailed metering study was conducted on about 100 homes in this group to determine isolate the determinants of savings for the retrofit installations.

Principal – (2009-2013)

Evaluation of ductless heat pump savings potential in a small pilot project for the ***Bonneville Power Administration***. The project became the basis for a multi-state demonstration project which installed over 30,000 ductless heat pumps in residences in the Pacific Northwest by 2014.

Principal – (2006-2008)
Commercial Baseline Evaluation: developed characterization of 2002-2004 commercial building and operating practice throughout the region for the ***Northwest Energy Efficiency Alliance.*** The project included a sample of new commercial buildings in all four states of the region. A total of 355 new buildings were audited. Audits included detailed characterization of all building components. Where possible, energy consumption was collected on about 200 buildings. EUIs were summarized across building types and states.

Principal – (2003-2005)
Provided lead technical support to the regional heat pump evaluation, including field review, billing analysis. Laboratory testing and consolidated evaluation findings for use in developing the regional heat pump program approach under contract with the ***Northwest Energy Efficiency Alliance***.

Principal – (1990-2010)
Lead analyst for Ecotope's involvement in the manufactured home programs for ***BPA*** and the ***states of Oregon, Idaho, and Montana***. These programs have included the Residential Construction Demonstration Project (RCDP) program from 1989 to 1992, the Manufactured Homes Acquisition Program (MAP) from 1992 through 1995, and the Northwest Energy-Efficient Manufactured Home (NEEM) program beginning in 1996 and continuing to the present. In six separate field studies from 1989 to 2008 Ecotope conducted billing analyses as well as detailed characteristics evaluations of each cohort.

Analyst/Consultant, Regional Technical Forum – (2002-2018)
Provide analytical support to the ***Regional Technical Forum***. This effort involves the development of calculation procedures and engineering adjustments to establish the basis for efficiency credits for Northwest utilities. Became a voting member of the RTF in 2018.

Project Manager – (1998-2000)
Developed and managed a regional review of 1998-1999 baseline construction practice in the residential and non-residential sectors for the ***Northwest Energy Efficiency Alliance.*** The study included the four-state Pacific Northwest region related to energy efficiency in buildings and response to various energy code provisions and enforcement practice. Developed a state-by-state sample of residential and nonresidential buildings and managed a field review of these buildings. A total of 500 homes and 200 other buildings were sampled and 500 interviews of building professionals were performed.

Project Manager – (1997-2000)
Developed program designs and evaluation for ***Portland General Electric*** and ***Oregon Department of Energy*** to provide residential duct sealing and heating system diagnostics as part of a regional market transformation effort for residential heating systems. Consulted on program design and advocated for a systems-based consumer approach to implementing duct sealing in the Pacific Northwest region.

Analyst – (2002-2006)
Evaluated nonresidential and residential energy conservation options for the ***Energy Trust of Oregon***. This effort included the development of long-term savings estimates and cost effectiveness of various efficiency measures for a conservation resource assessment applicable to the Oregon markets.

Consultant – (1993-2000)
Expert consultant to the California Public Utilities Commission for the review and development of energy conservation savings used to develop utility shareholder savings incentives. For verification review of utility earnings claims for the California Public Utilities Commission (CAPUC) Division of Ratepayer Advocacy (DRA). Provide review, oversight and field evaluation of selected utility demand-side management (DSM) programs throughout California. This work includes programs for the non-residential and sectors (both Commercial and industrial), new construction and retrofits. The evaluations consist of engineering reviews, field inspections and program review for 8 to 10 utility programs, based on the year of the utility energy savings claims for these programs. This work also involves the documentation of findings for use in the regulatory process and in CAPUC approval of utility earnings and expenses for their DSM programs. The findings were litigated before the ALJ for the state of California and required expert testimony.

Academic Experience

M.A., Sociology, University of Washington, Seattle, WA, 1973.
Bachelor of Architecture, University of Washington, Seattle, WA, 1969.

Professional Affiliations and Activities

Corresponding Member/ Member, Regional Technical Forum, 2004 to present
Member, ASHRAE, 2004-present
Member, ASHRAE, SSPC 62.2, 2011-2022
International Solar Energy Society, 1977-present
Energy Technical Advisory Group (TAG), Washington State Building Code Council, 1997-present
Seattle Mayor's Citizens' Advisory Committee on Electric Rates, l978-l980, 1987-1988
Seattle Mayor's Citizens' Advisory Committee on Energy Codes, l978-l979

Selected Publications*

Baylon, D, C. Murray, P. Storm, 2020, *Developing a Carbon Accounting for Energy Codes in Washington State,* 2020 ACEEE Summer Study.

Baylon, D, 2018, *Commercial Building Energy Performance in the Pacific Northwest, 1980 to 2010*, 2018 ACEEE Summer Study.

Storm, P. B, Hannas, D. Baylon, 2017, *Building Energy Use Intensity Targets*, For City of Seattle, Office of Sustainability and Environment.

Baylon, D, C. Murray, 2016, *The Development of the Residential Option Table in the Washington State Energy Code,*2016 ACEEE Summer Study.

Baylon, D, P Storm, B. Hannas, V. Mugford, 2013, *Residential Building Stock Assessment: Multi-Family Characteristics and Energy Use*, For the Northwest Energy Efficiency Alliance.

Baylon, D, P Storm, K. Geraghty, Bob Davis 2012, *Residential Building Stock Assessment: Single-Family Characteristics and Energy Use*, For the Northwest Energy Efficiency Alliance.

Baylon, D, B. Larson, P Storm, K. Geraghty, 2012, *Ductless Heat Pump, Impact and Process Evaluation: Field Metering Report,* For the Northwest Energy Efficiency Alliance.

Baylon, D., M. Kennedy. August 2008. *Baseline Characteristics of the 2002-2004 Non-Residential Sector*, For the Northwest Energy Efficiency Alliance.

Baylon, D., M. Kennedy, S. Strand. February 2007. *Northwest Benchmark Energy Standards (NWBEST)*. For the Northwest Energy Efficiency Alliance.

Baylon, David, S. Strand, R. Davis, D. Robison, E. Kruse. December 2005. *Analysis of Heat Pump Installation Practices and Performance.* For Heat Pump Working Group (includes Northwest Energy Efficiency Alliance and Oregon Dept. of Energy).

Baylon, D., M. Kennedy, S. Strand. November 2006. *Best of Region Energy Standard: Specifications for Implementation of Fifth Power Plan Model Conservation Standards for New Commercial Buildings.* For the Northwest Energy Efficiency Alliance.

Davis, Bob, D. Baylon and T. Hewes. August 2004. *Field Evaluation of New Manufactured Homes in the Pacific Northwest*. American Council for an Energy-Efficient Economy (ACEEE) Summer Study.

D. Baylon, M. Kennedy, S. Borrelli, 2001, *Baseline Characteristics of the Non-Residential Sector in Idaho, Montana, Oregon, and Washington,* For the Northwest Energy Efficiency Alliance.

D. Baylon, S. Strand, M. Kennedy, 2001, *Baseline Characteristics of the Multi-Family Sector: Oregon and Washington,* For the Northwest Energy Efficiency Alliance.

D. Baylon, S. Strand, M. Kennedy, 2001, *Baseline Characteristics of the Residential Sector in Idaho, Montana, Oregon, and Washington,* For the Northwest Energy Efficiency Alliance.

D. Baylon, Bob Davis, Paul Francisco, Shelly Borrelli, 1999, *Duct Sealing Pilot Program Results,* For Puget Sound Energy.

D. Baylon, A. Houseknecht, J. Heller, L. Tumidaj, 1997, *Compliance with the 1994 Washington State Nonresidential Energy Code (NREC),* For the Utility Code Group.

D. Baylon, M. Frankel, 1994, *Residential Energy Code Compliance in the State of Oregon,* For the Oregon Department of Energy.

*publications are available at http://ecotope.com/ecotope-publications-database/ and various client web sites.