

2006 SEATTLE ENERGY CODE
(2006 Washington State Energy Code
plus Seattle Amendments)

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OUTLINE

- 2006 Seattle Energy Code development:
context & goals, public review process
- Building envelope:
new construction, alterations
- Mechanical:
new construction, alterations
- Lighting:
new construction, alterations
- Further information

2006 SEATTLE ENERGY CODE: Development - Context & Goals

- Lead agencies: *Seattle DPD, City Light*
- Context: *Mayor's Climate Protection Initiative, Natl Conf of Mayor's vote for 2030 Challenge*
- Charge/Goals:
 1. *achieve the energy savings in Resolution 30280: 20% improvement over current version of ASHRAE/IESNA Std. 90.1 for nonresidential (no Seattle residential changes, per State law)*
 2. *improve implementation of existing amendments*

2006 SEATTLE ENERGY CODE: Development - Public Review Process

- CCAB (Constr.Code.Adv.Bd.) briefing: fall 2006
- Draft posted on web and e-mailed: January 2007
- Public review (incl. 5 mtgs): January-March 2007
- Presentations to professional organizations (AIA, ASHRAE, BOMA, IES): Jan-Feb 2007
- CCAB recommendations: March 2007
- Mayor/City Council review: May-June 2007
- Effective date: summer 2007

2006 SEATTLE ENERGY CODE: Overview

- Many existing Seattle amendments are retained with no changes
- Some existing Seattle amendments are modified solely to reflect partial adoption into WSEC
- A number of Seattle amendments are incorporated into the WSEC and so are no longer needed
- Proposed new Seattle amendments

2006 SEATTLE ENERGY CODE: Building Envelope – New Construction

- Opaque assemblies and glazing (Table 13-1):
revise U-factor (opaque & glazing), SHGC to be comparable to electric resistance criteria (minimize space heating variations)
- Opaque assemblies: less thermal bridges
metal stud walls: R-13 + R-7.5 cont.insul.
masonry: R-12 cont.(ext), R-13 + R-6 cont.(int)
- Glazing: good performance day & night
U-0.40 max: low-e, argon, t.b.frame/spacer
SHGC-0.35 or SHGC-0.40 w/0.3 overhang

2006 SEATTLE ENERGY CODE: Building Envelope – New Construction

- Semiheated spaces (1310)
clarify that these are calculated separately
- Air leakage: revised to match Std 90.1 (1314)
*air leakage ratings for glazing products,
loading dock weatherseals, vestibules*
- Default table revisions to match Std 90.1 (Ch.10)
*updated metal building wall and roof tables
added table for insulation above deck*

2006 SEATTLE ENERGY CODE: Building Envelope – Additions et al

- Additions (1131, no change) & altered portions:
comply with new construction requirements
- Change of use (1133, no change):
unheated to heated – comply as new construc.
Group R to other – treat as alteration
- Historic buildings (1134, no change):
special treatment for historic component only
(usually applies to upper level facades,
but NOT most street-level storefronts)

2006 SEATTLE ENERGY CODE: Building Envelope – Alterations

- Glazing (1132.1, 1323 except.1, no change):
*U-factor to match Table 13-1, but
SHGC allowed to match existing SHGC
storefront windows to have double w/low-e
(like Westlake Center), and good VT
but exempt from SHGC requirements*
- Opaque assemblies (1132.1, no change):
*existing wall: okay to fill cavity with insulation
existing roof: must insulate to Table 13-1 when
sheathing is exposed*

2006 SEATTLE ENERGY CODE: Mechanical – New Construction

- HVAC equipment performance (1411):
*equipment to be listed in ARI certification dir.
all chillers to comply at nearest table value
heating systems in unenclosed spaces required
to have occupancy sensor controls*
- Motorized dampers (1412.4):
*required for all intakes & exhausts > 300 cfm
(exemptions for low-rise buildings
deleted to match Std 90.1, 6.4.3.3.3)*

2006 SEATTLE ENERGY CODE: Mechanical – New Construction

- Simple systems (1422-1423): *same as complex*
- Economizer (1433): *air economizer is baseline*
- Economizer exceptions (1433):
 - #1: limited to units that comply with all of these:*
 - *in the interior of buildings,*
 - *very small units (< 33,000 Btuh, < 3 tons)*
 - *efficiency 15%+ above Table 14-1A,B,D*
 - *maximum of 72,000 Btuh (6 tons) per bldg
or 5% of air economizer capacity*

2006 SEATTLE ENERGY CODE: Mechanical – New Construction

- Economizer exceptions, continued (1433):
 - #2: limited to terminal units that comply w/ both:
 - chiller efficiency 10%+ above Table 14-1C
 - maximum of 72,000 Btuh/bldg or 5% of econ.*
 - #3: water econ. deleted (no change, formerly #2)*
 - #6: limited to systems w/ dehumidification problems*
 - #7: water source heat pump loops limited to small units (no change, formerly #6)*
 - #9: computer server rooms with higher efficiency units and waterside economizer (no change, except informative note, formerly #8)*

2006 SEATTLE ENERGY CODE: Mechanical – New Construction

- Heat recovery (1436):
 - with >5,000 cfm and >70% outside air*
 - with >10,000 cfm and >50% outside air*
 - with >20,000 cfm and >30% outside air*
- Fan motor efficiencies (1437, no change):
 - fans < 1 hp in series terminal units to have electronically-commutated motors (ECM)*
- Fan control (1438):
 - VFD for all fans and pumps > 7.5 hp*

2006 SEATTLE ENERGY CODE: Mechanical – New Construction

- Chiller efficiencies (Table 14-1C):
 - revised full-load COP (no change)*
 - revised part-load IPLV (changed)*
 - 0.95 kW/ton, 3.70 IPLV: air-cooled w/condenser*
 - 0.85 kW/ton, 4.15 IPLV: air-cooled w/o condenser*
 - 0.63 kW/ton, 5.55 IPLV: water-cooled < 40 tons*
 - 0.61 kW/ton, 5.80 IPLV: water-cooled < 150 tons*
 - 0.54 kW/ton, 6.50 IPLV: water-cooled < 300 tons*
 - 0.50 kW/ton, 7.05 IPLV: water-cooled > 300 tons*

2006 SEATTLE ENERGY CODE: Mechanical – Additions et al

- Additions (1131, no change):
comply with new construction requirements
- Change of use (1133, no change):
*unheated to heated – comply as new construc.
Group R to other – treat as alteration*
- Historic buildings (1134, no change):
*special treatment for historic component only
(but, are there historic mechanical systems?)*

2006 SEATTLE ENERGY CODE: Mechanical – Alterations

- Alterations (1132.2, Table 11-1):
*for existing systems w/o economizer,
alterations to comply with Table 11-1
(including packaged units, air handlers,
water-source heat pumps, boilers)
same size replacement to be higher efficiency
plus other features, limits on expansion –
unless system complies w/Sec.1433
intent is to bring non-conforming systems
closer to the current code energy savings*

2006 SEATTLE ENERGY CODE: Lighting – New Construction

- Furniture-mounted lighting (1512.2):
*required to have automatic shut-off device, or
else be included in lighting power allowance*
- Photocell control for lighting in daylight zones
(1513.3, no change):
*automatic dimming or stepped-switching
within 15 ft of window & under skylights
stepped switching must have separate step
to control each lamp within a fixture*

2006 SEATTLE ENERGY CODE: Lighting – New Construction

- Efficient interior lighting (1530, Table 15-1):
 - office: 0.95 W/ft² (3rd generation T-8)*
 - retail: 1.5 W/ft² base + merchandise display of*
 - 1.5 W/ft² for tenant spaces < 3,000 ft²*
 - 1.2 W/ft² for tenant spaces > 3,000 ft²*
 - (more lumens from ceramic metal halide)*
- Exterior lighting (1532, no change)
 - retain existing Seattle Energy Code criteria*
 - (do not adopt new State text & table)*

2006 SEATTLE ENERGY CODE: Lighting – Additions et al

- Additions (1131, no change):
comply with new construction requirements
- Change of use (1133, no change):
*unheated to heated – comply as new construc.
Group R to other – treat as alteration*
- Historic buildings (1134, no change):
*special treatment for historic component only
(generally rare, but a few lighting cases)*

2006 SEATTLE ENERGY CODE: Lighting – Alterations

- Wattage (1132.3, Table 15-1, no change):
*must comply with W/ft^2 if $> 60\%$ of fixtures in a room are changed
otherwise, maintain or reduce W/ft^2*
- Controls (1132.3, no changes):
*occupancy sensors for new offices $< 300 ft^2$
comply with daylighting requirements where
new wiring is being installed or
fixtures being relocated to a new circuit*

2006 SEATTLE ENERGY CODE: Reference Standard (RS) - 29

- Building envelope (RS-29, 3.3.1):
standard design to have metal stud walls and same glazing area as proposed if <Table 13-1
- Fan system (RS-29, 3.4.4):
standard design to have hp per Std 90.1-2007
- Prototype HVAC systems (RS-29, Table 3-3):
#1 & #2: electric resistance heat not allowed
#5 & #6: chiller to be water-cooled

2006 SEATTLE ENERGY CODE: Further Information

- Summary of changes and text of amendments:
Seattle Energy Code website, 2006 SEC update
(www.seattle.gov/dpd/energy)
- Insert pages, updates to forms, etc:
to be completed after Mayor/City Council action
- DPD staff for questions on projects in Seattle:
Energy/Mechanical plan review: 206-684-7846
Inspections: 206-684-8900