

Public Review Draft

Proposed Addendum av to Standard 189.1-2017

Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review (February 2020)
(Draft Shows Proposed Changes to Current Standard)

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Foreword

This is an update to the Building Performance Factors (BPFs) Table 7.5.1 to reflect increases in the energy efficiency requirements in Standard 189.1-2020.

These BPF values are based on a draft energy savings analysis conducted by Pacific Northwest National Laboratory (PNNL) for Standard 189.1-2017 compared to Standard 90.1-2016 using the DOE Commercial Prototype Building Models https://www.energycodes.gov/development/commercial/prototype_models with enhancements using EnergyPlus software V9.0. The BPFs are calculated using the following formula:

$$BPF_{189.1-2020} = (1 - \text{energy cost savings \% for regulated energy end uses}) * BPF_{90.1-2019}$$

The addendum shows changes to the 2017 standard as modified by recently published addendum k, which added the Renewable Fraction column to Table 7.5.1. The table now lists BPF for each building type by climate zone. Note: as currently published, Table 7.5.1 is shown in portrait mode on the page, but it is shown here in landscape mode to accommodate added columns. This change in orientation is not marked as a change.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum av to 189.1-2017

Modify Table 7.5.1 as shown below

Table 7.5.1 Building Performance Factors (BPF) and Renewable Fractions (RF)

Building Type	Building Performance Factor (BPF)	Building Performance Factor (BPF) per Climate Zone																Renewable Fraction (RF)	
		<u>0A & 1A</u>	<u>0B & 1B</u>	<u>2A</u>	<u>2B</u>	<u>3A</u>	<u>3B</u>	<u>3C</u>	<u>4A</u>	<u>4B</u>	<u>4C</u>	<u>5A</u>	<u>5B</u>	<u>5C</u>	<u>6A</u>	<u>6B</u>	<u>7</u>		<u>8</u>
Multifamily	0.71	<u>0.61</u>	<u>0.62</u>	<u>0.58</u>	<u>0.58</u>	<u>0.61</u>	<u>0.59</u>	<u>0.50</u>	<u>0.66</u>	<u>0.66</u>	<u>0.67</u>	<u>0.63</u>	<u>0.65</u>	<u>0.66</u>	<u>0.62</u>	<u>0.65</u>	<u>0.61</u>	<u>0.65</u>	0.50
Healthcare/hospital	0.56	<u>0.56</u>	<u>0.55</u>	<u>0.53</u>	<u>0.50</u>	<u>0.53</u>	<u>0.50</u>	<u>0.50</u>	<u>0.51</u>	<u>0.49</u>	<u>0.50</u>	<u>0.53</u>	<u>0.47</u>	<u>0.49</u>	<u>0.54</u>	<u>0.49</u>	<u>0.55</u>	<u>0.55</u>	0.35
Hotel/motel	0.58	<u>0.51</u>	<u>0.49</u>	<u>0.49</u>	<u>0.47</u>	<u>0.49</u>	<u>0.48</u>	<u>0.48</u>	<u>0.48</u>	<u>0.48</u>	<u>0.47</u>	<u>0.45</u>	<u>0.47</u>	<u>0.46</u>	<u>0.46</u>	<u>0.47</u>	<u>0.46</u>	<u>0.47</u>	0.50
Office	0.54	<u>0.48</u>	<u>0.52</u>	<u>0.45</u>	<u>0.51</u>	<u>0.49</u>	<u>0.51</u>	<u>0.42</u>	<u>0.47</u>	<u>0.47</u>	<u>0.45</u>	<u>0.47</u>	<u>0.47</u>	<u>0.44</u>	<u>0.49</u>	<u>0.48</u>	<u>0.46</u>	<u>0.49</u>	0.50
Restaurant	0.59	<u>0.62</u>	<u>0.62</u>	<u>0.58</u>	<u>0.59</u>	<u>0.58</u>	<u>0.60</u>	<u>0.57</u>	<u>0.61</u>	<u>0.56</u>	<u>0.60</u>	<u>0.62</u>	<u>0.59</u>	<u>0.63</u>	<u>0.65</u>	<u>0.62</u>	<u>0.66</u>	<u>0.69</u>	0.10
Retail	0.50	<u>0.48</u>	<u>0.51</u>	<u>0.46</u>	<u>0.52</u>	<u>0.48</u>	<u>0.52</u>	<u>0.48</u>	<u>0.48</u>	<u>0.52</u>	<u>0.51</u>	<u>0.47</u>	<u>0.50</u>	<u>0.51</u>	<u>0.47</u>	<u>0.48</u>	<u>0.46</u>	<u>0.47</u>	0.50
School	0.37	<u>0.37</u>	<u>0.45</u>	<u>0.36</u>	<u>0.41</u>	<u>0.36</u>	<u>0.41</u>	<u>0.39</u>	<u>0.36</u>	<u>0.39</u>	<u>0.38</u>	<u>0.36</u>	<u>0.39</u>	<u>0.36</u>	<u>0.35</u>	<u>0.36</u>	<u>0.35</u>	<u>0.36</u>	0.50
Semiheated Warehouse	0.44	<u>0.36</u>	<u>0.40</u>	<u>0.38</u>	<u>0.40</u>	<u>0.41</u>	<u>0.42</u>	<u>0.40</u>	<u>0.42</u>	<u>0.41</u>	<u>0.44</u>	<u>0.47</u>	<u>0.44</u>	<u>0.45</u>	<u>0.51</u>	<u>0.48</u>	<u>0.54</u>	<u>0.53</u>	0.50
All others	0.54	<u>0.51</u>	<u>0.53</u>	<u>0.46</u>	<u>0.48</u>	<u>0.46</u>	<u>0.50</u>	<u>0.47</u>	<u>0.50</u>	<u>0.48</u>	<u>0.50</u>	<u>0.47</u>	<u>0.47</u>	<u>0.45</u>	<u>0.47</u>	<u>0.47</u>	<u>0.47</u>	<u>0.43</u>	0.50

a. Conditioned warehouses shall use the "All others" category

