Annex 73: Task A - Energy Targets Update

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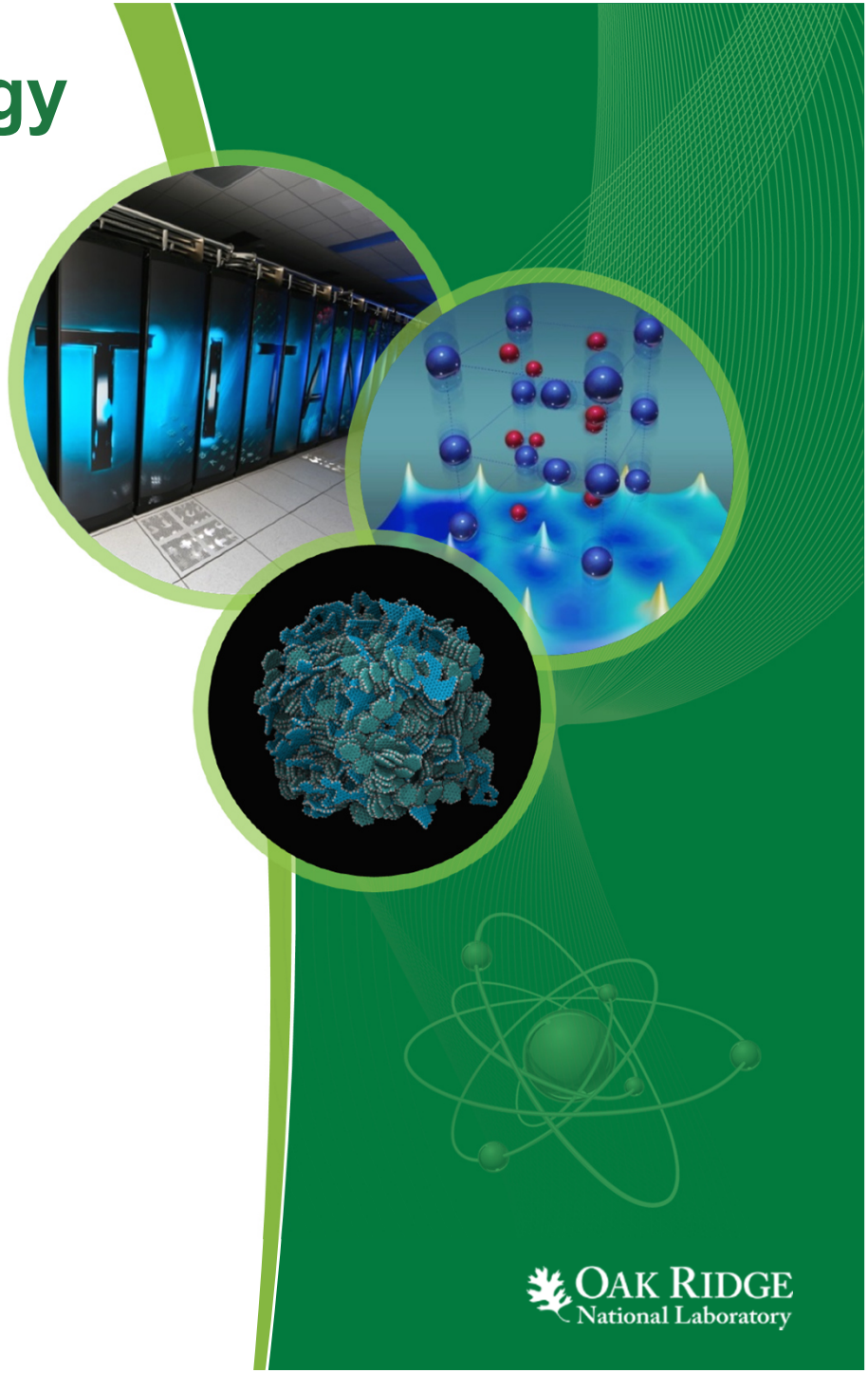

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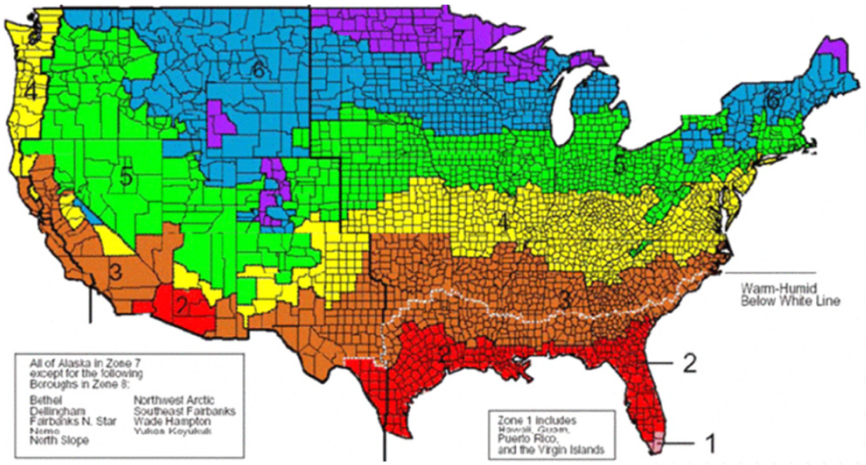
U.S. Targets – What They Currently Look Like*

Energy Use Intensity by Building Type (kBtu/sf-yr)							
Building Type	ASHRAE Climate Zone:						
	1A	2A	3A	4A	5A	6A	7
Office	108	103	99	99	98	102	103
Bank	191	183	176	176	174	181	183
Food market	324	332	325	331	342	356	364
Clinic	134	130	129	127	123	125	122
University	166	152	139	144	146	156	161
Hospital	288	285	276	275	265	263	258



* Primary energy use intensities

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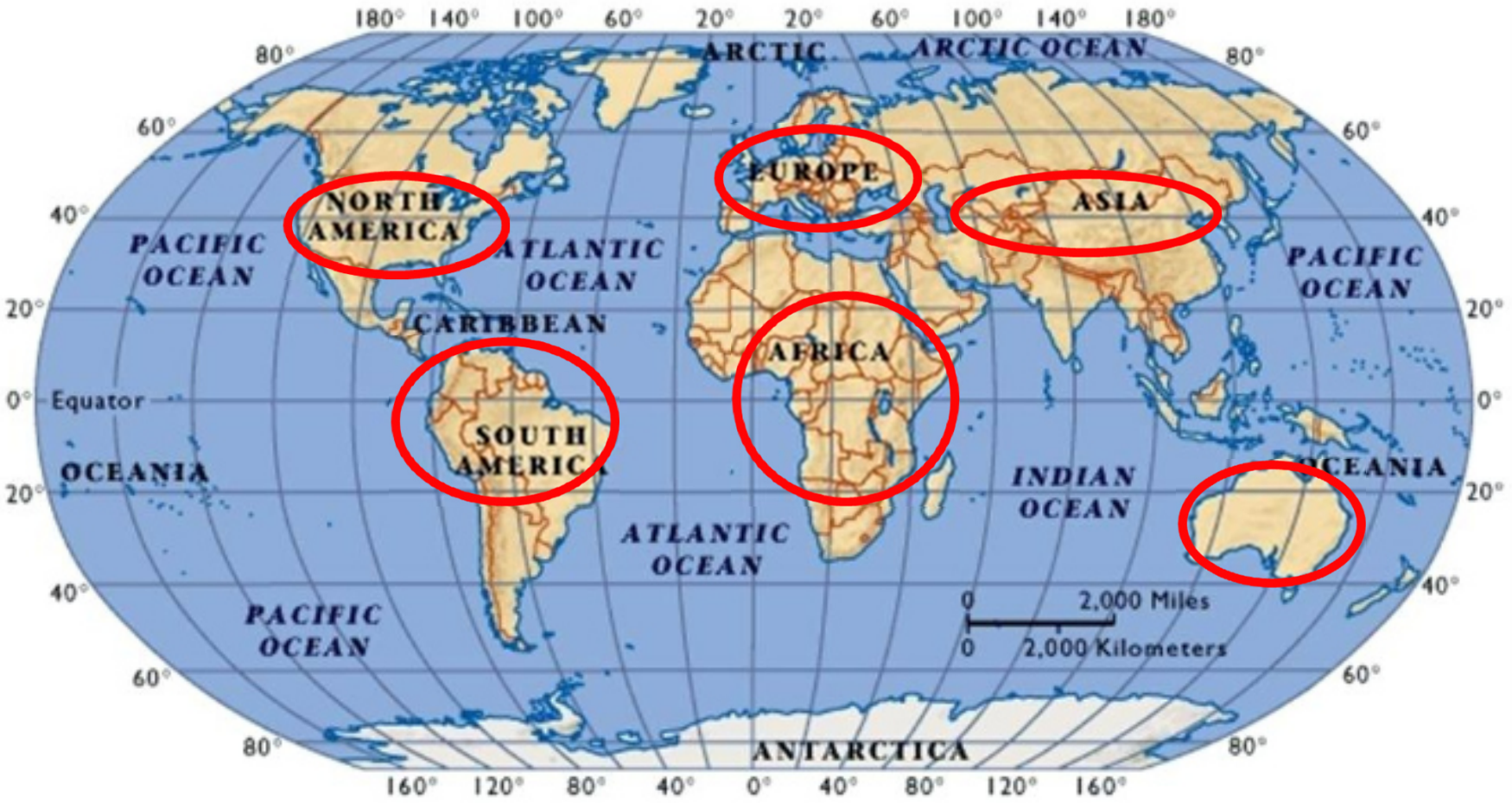
Limited Targets By Building Type Could Work In These Areas*



* The U.S. covers 20° latitude and is well represented by a single set of energy targets by building type.

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Documents/Data Received

- Germany: “Benchmarks for the energy efficiency of non-residential buildings”, 2009, BBSR-Online-Publikation, Nr. 09/2009.
  - Contains reference and target “comparative” energy use intensities for heating and electrical energies by building type
- Austria: “Energy Saving and Heat Protection”, Guidelines of the Austrian Institute of Building Technology, OIB-330.6-009/15, Mar. 2015
  - Contains heating limits for non-residential but does not appear to be by building type or very limit building types

*1. “Benchmarks for the energy efficiency of non-residential buildings”, 2009, BBSR-Online-Publikation, Nr. 09/2009.
2. “Energy Saving and Heat Protection”, Guidelines of the Austrian Institute of Building Technology, OIB-330.6-009/15, Mar. 2015

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Targets – Consistent Format

- **U.S. targets are total building primary energy use**
  - **Advantages: Few values per country/continent, little climatic variance; limited amount of data needed.**
  - **Disadvantage: Differing primary energy conversion multipliers**
- **Germany targets (comparatives) are for separate heating and electricity***
  - **Advantage: Easier to calculate and understand**
  - **Disadvantage: Large variances in targets due to climate, thus many different targets within a single country and more uncertainty in targets; large amounts of data needed.**

Format in other countries?

*1. “Benchmarks for the energy efficiency of non-residential buildings”, 2009, BBSR-Online-Publikation, Nr. 09/2009.
2. “Energy Saving and Heat Protection”, Guidelines of the Austrian Institute of Building Technology, OIB-330.6-009/15, Mar. 2015

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Example Data Collection Template to Enable Development of Targets by Country (or Continent?)

Enter your buildings in this template (in yellow cells)

	Build -ing #	Building Type	Floor area (value)	Floor area (unit)	Annual electricity use (value)	Annual electricity use (unit)	Total non-electric energy use (value)	Total non-electric energy use (units)
Exa. 1	116	Office	66,300	sq ft	994,500	kWh	1,115	MMBtu
Exa. 2	168	Clinic	18,200	sq ft	273,000	kWh	943	MMBtu
Exa. 3	213	Dormitory	82,600	sq ft	989,000	kWh	1,803	MMBtu
Exa. 4	441	Hotel	20,000	sq m	312	MWh	756	MMBtu
Exa. 5	506	Retail	1,500	sq m	23	MWh	109	MMBtu

Do you have data? Will this form work for it's collection?

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Community/Campus Approach to Targets

- Build up from building metrics

Campus Statistics by Building Type			
Building Type	Building Target EUI	Building Size (sq m)	Target Energy Use
Office 1	356	2000	712,000
Office 2	356	1000	356,000
Clinic	490	500	245,000
Distribution Center	181	5000	905,000
Motel/Inn	517	2000	1,034,000
Vehicle service/repair	246	400	98,400

Campus Totals	
Building Floor Area	Target Energy Use
10900	3,350,400

Campus Target EUI
307

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Data Are Needed

- Germany to provide data
- Limited data from many places is far more important than lots of data from a few places
- Can you help?

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Questions?

Thank you!

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