Acronyms

\$/km \$/kWh \$/MJ	dollars per kilometer dollars per kilowatt-hour dollars per megajoule	ASCPMM	advanced sensors, controls, platforms and modeling for manufacturing
\$/MMBtu	dollars per million British thermal	ASAI	average service availability index
	units	ASTA	Advanced Superconducting Test Accelerator
3D AC	3-dimensional alternating current	ASTM	American Society for Testing and Materials
ACCEL	Accelerating Competitiveness through Computational Excellence	ATF	Accelerator Test Facility
	Program	ATLAS	Argonne Tandem Linac Accelerator
ACTT	Advanced Computing Tech Team	AUSC	System advanced ultra-super critical
AM	additive manufacturing	AV	automated vehicle
AEO	Annual Energy Outlook (of the EIA)	AWAF	Argonne Wakefield Accelerator
AEP	annual energy production	AWAF	Facility
AER	all-electric range	BAU	business-as-usual
AERI	atmospheric emitted radiance interferometers	BECCS	bioenergy with carbon capture and storage
AHT	absorption heat transformer	BELLA	Berkeley Lab Laser Accelerator
Al	aluminum		Center
ALCC	ASCR Leadership Computing Challenge	BES	U.S. DOE Office of Basic Energy Sciences
ALCF	Argonne Leadership Computing Facility	BESAC	Basic Energy Sciences Advisory Committee
ALD	atomic layer deposition	BESC	BioEnergy Science Center
ALS	Advanced Light Source	BGCCS	biomass gasification with carbon
AMI	advanced metering technology		capture and sequestration
AMP	Advanced Manufacturing	BIPV	building integrated photovoltaics
	Partnership	BLIP	Brookhaven Linac Isotope Producer
ANL	Argonne National Laboratory	BNL	Brookhaven National Laboratory
API APS	American Petroleum Institute Advanced Photon Source	BOEM	Bureau of Ocean Energy Management
APU	auxiliary power unit	ВОР	blowout preventer
ARM	Atmospheric Radiation	BP	British Petroleum
ARIT	Measurement Climate Research	BRCs	Bioenergy Research Centers
	Facility	вто	U.S. Department of Energy Building
ARPA-E	Advanced Research Projects		Technologies Office
ARRA	Agency-Energy American Reinvestment and	BTRIC	Buildings Technology Research and Integration Center
ASCAC	Recovery Act	BTS	Billion-Ton Study
ASCAC	Advanced Scientific Computing Advisory Committee	Btu	British thermal unit

CAES	compressed air energy storage	CO ₂ -eq	CO ₂ -equivalent global warming potential
CAFÉ	corporate average fuel economy	COE	cost of energy
CAIDI	customer average interruption duration index	COP	crude oil price
CASL	Consortium for the Advanced Simulation of Light Water Reactors	COPV	composite overwrapped pressure vessel
CAVs CBO	connected and automated vehicles	CORAL	Collaboration of Oak Ridge, Argonne, and Livermore
CBTL	Congressional Budget Office coal and biomass to liquids	CRADA	Collaborative Research and Development Agreement
CBTLE	coal and biomass to liquids and electricity	CRF	Combustion Research Facility
CBTLE-CCS	coal and biomass to liquids and electricity with carbon capture and sequestration	CSD	compression, storage and dispensing concentrating solar thermal power
СС	combined cycle	CSPAD	Cornell-SLAC hybrid Pixel Array
CCE	cost of conserved energy	001712	Detector
CCGT	combined cycle gas turbine	СТ	combustion turbine
CCN	cloud condensation nuclei	CTL	coal to liquids
ccs	carbon capture and storage	CVD	chemical vapor deposition
CCWG	Climate Change Working Group	CVR	conservation voltage reduction
CDF	core damage frequency	CXI	Coherent X-ray Imaging
CEBAF	Continuous Electron Beam	D&D	demonstration and deployment
	Accelerator Facility	DARPA	Defense Advanced Research
CERN	European Organization for Nuclear Research	DC	Agency direct current
CESAR	Center for Exascale Simulation of	DCV	demand-controlled ventilation
	Advanced Reactors	DEC	direct energy conversion
CFD	computational fluid dynamics	DG	distributed generation
CFL	compact florescent light	DHS	U.S. Department of Homeland
CFN	Center for Functional Nanomaterials	DIII-D	Security DIII-D Tokamak
CFRP	carbon fiber reinforced polymer	DLP	digital light processing
CH,	compressed hydrogen storage	DMDII	Digital Manufacturing and Design
CH ₄	methane	DINDII	Innovation Institute
СННР	combined heat, hydrogen and	DME	dimethyl ether
	power	DMLS	direct metal laser sintering
СНР	combined heat and power	DMS	distribution management systems
CI	compression ignition	DMT	dry metric ton/tonne
CIGS	Copper-Indium-Gallium-Selenide	DMZs	demilitarized zones
CINT	Center for Integrated Nanotechnologies	DNA	deoxyribonucleic acid
CLIC	Compact Linear Collider	DOE	U.S. Department of Energy
CMI	Critical Materials Institute	DOE-EERE	U.S. Department of Energy's
CNM	Center for Nanophase Materials		Office of Energy Efficiency and Renewable Energy
	Sciences	DOE-FE	U.S. Department of Energy's Office
СО	carbon monoxide		of Fossil Energy
CO ₂ -EOR	carbon dioxide CO ₂ Enhanced Oil Recovery	DOE-IE	U.S. Department of Energy's Office of Indian Energy Policy and Programs

DOE-NE	U.S. Department of Energy's Office of Nuclear Energy	FACET	Facility for Advanced Accelerator Experimental Tests
DOE-OE	U.S. Department of Energy's Office of Electricity Delivery and Energy	FACTS	flexible alternating current transmission systems
DOE-SC	Reliability U.S. Department of Energy's Office of Science	FASTMath	Frameworks, Algorithms, and Scalable Technologies for Mathematics
DR	demand response	FC	fuel cell
DSM	demand-side management	FCEV	fuel cell electric vehicle
E10	a blend of 10% ethanol and 90%	FCL	fault current limiter
	gasoline by volume	FCV	fuel cell vehicle
E85	a blend of 85% ethanol and 15%	FDM	fused deposition modeling
EBM	gasoline by volume	FERC	Federal Energy Regulatory
EDT	electron beam melting electric drive technologies		Commission
EERE	U.S. Department of Energy's	FLISR	fault location isolation and service restoration
	Office of Energy Efficiency and Renewable Energy	flops	floating point operations per second
EFRC EGS	Energy Frontier Research Centers enhanced geothermal systems	FNAL	Fermi National Accelerator Laboratory
EI	energy intensity	FORGE	Frontier Observatory for Research in Geothermal Energy
EIA	U.S. Energy Information Agency	FRP	fiber-reinforced polymer
ELM EMF	edge-localized mode	F-T	Fischer-Tropsch
EMIS	electromagnetic fields	FY	fiscal year
EMP	electromagnetic isotope separator electromagnetic pulse	g/kWh	grams per kilowatt-hour
EMS	energy management system	gal/MWh	gallons per megawatt-hour
EMSL	Environmental Molecular Sciences	GaN	gallium nitride
2.102	Laboratory	Gbps	gigabits per second
EOR	enhanced oil recovery	GCAM	Global Change Assessment Model
EPA	U.S. Environmental Protection	GDP	gross domestic product
EDDI	Agency Electric Power Research Institute	GE	General Electric
EPRI ERCOT		GeV	gigaelectron volt
ERCOI	Electric Reliability Council of Texas energy return on investment	GFR	gas-cooled fast reactor
ESBWR	Economic Simplified Boiling Water	gge	gallon of gasoline equivalent
LSBVVK	Reactor	GHG	greenhouse gas
ESIF	Energy Systems Integration Facility	GLBRC	Great Lakes Bioenergy Research Center
ESM	Earth System Model	GMD	geomagnetic disturbance
ESNet	Energy Sciences Network	GPS	global positioning system
EUE	expected unserved energy	GSA	U.S. General Services
eV	electron volt		Administration
EV	electric vehicle	GT	gas turbine
EVSE	electric vehicle supply equipment	Gt	gigaton
EWR	enhanced water recovery	GtC	gigaton of carbon
ExaCT	Center for Exascale Simulation of Combustion in Turbulence	GtCO ₂	gigaton of carbon dioxide
ExMatEx	Co-design Center for Materials in	GW	gigawatt
EAMALEX	Extreme Environments	GWh	gigawatt-hour

GWP	global warming potential	ISO	independent system operator
HC	hydrocarbon	ISO	International Organization for
HCCI	homogeneous charge compression ignition	IT	Standardization information technology
HDV	heavy-duty vehicles	ITER	International Thermonuclear
He-3	helium-3		Experimental Reactor
HES	hydrogen energy storage	JBEI	Joint Bioenergy Institute
HEV	hybrid electric vehicles	JCAP	Joint Center for Artificial
HFC	hydrofluorocarbon	ICECD	Photosynthesis
HFIR	High Flux Isotope Reactor	JCESR	Joint Center for Energy Storage Research
HHV	higher heating value	JGI	Joint Genome Institute
HILF	high-impact, low-frequency	kBtu	thousand British thermal units
HPC	high-performance computing	kBtu/hr	thousand British thermal units per
HPCEE	High Performance Computer for Energy and the Environment	kBtu/sq. ft.	hour thousand British thermal units per
HPCIC	HPC Innovation Center	KDtu/39.1t.	square foot
HT	high temperature	kg	kilogram
HTS	high-temperature superconductors	klm	kilolumen
HVAC	heating, ventilation, and air	kms	kilometers
	conditioning	kMWh	thousand megawatt hours
HVAC	high voltage alternating current	kV	kilovolt
HVDC	high-voltage direct current	kW	kilowatt
IACMI	Institute for Advanced Composites Manufacturing Innovation	kWh	kilowatt-hour
IAM	integrated assessment model	LANL	Los Alamos National Laboratories
ICE	internal combustion engine	LAP	laser-plasma accelerator
ICEV	internal combustion engine vehicle	LBNL	Lawrence Berkeley National Laboratory
ICT	information and communications	LCA	life-cycle assessment
IDPRA	technologies	LCI	life-cycle inventory
IDPKA	Isotope Development and Production for Research and	LCIA	life-cycle impact assessment
	Applications subprogram	LCLS	Linac Coherent Light Source
IEA	International Energy Agency	LCLS-II	Linac Coherent Light Source-II
IEEE	Institute of Electrical and	LCOD	levelized cost of driving
	Electronics Engineers	LCOE	levelized cost of electricity
IGCC	integrated gasification combined	LDV	light-duty vehicles
IGSM	cycle Integrated Global Systems Model	LED	light-emitting diode
ILC	International Linear Collider	LFR	lead-cooled fast reactor
ILL	Institut Laue-Langevin	LHC	Large Hadron Collider
INCITE	Innovative and Novel	LHV	lower heating value
INCITE	Computational Impact on Theory and Experiment	Li/LMRNMC	lithium metal batteries with lithium- and manganese-rich high-energy cathode
INL	Idaho National Laboratory	LIFT	Lightweight Innovations for
IOR	improved oil recovery	-II I	Tomorrow Consortium
IPCC	Intergovernmental Panel on Climate Change	Li-ion LLNL	lithium-ion Lawrence Livermore National
IPF	Isotope Production Facility	LLINL	Laboratory
		lm/W	lumens per watt

LMD LMRNMC	laser metal deposition lithium- and manganese-rich high-	NEA	Nuclear Energy Agency of the OECD
LNG	energy cathode liquefied natural gas	NERC	North American Electric Reliability Corporation
LOLP	loss of load probability	NERSC	National Energy Research Scientific Computing Center
LOM LPA	laminated object manufacturing laser-plasma accelerator	NETL	National Energy Technology Laboratory
LPG	liquefied petroleum gas	NIMH	nickel-metal hydride
LPTs	large power transformers	NIR	near-infrared
LTC	low-temperature combustion	NIST	National Institute of Standards and
LUEI	land use energy intensity		Technology
LWR	light water reactors	NNI	National Nanotechnology Initiative
M&V	measurement and verification	NNSA	U.S. National Nuclear Security
MCFC	molten carbonate fuel cell	Non	Administration
MDF	Materials Demonstration Facility	NOx	nitrogen oxides
MDF	Manufacturing Demonstration Facility	NPC	National Petroleum Council
MDV	medium-duty vehicles	NRC	U.S. Nuclear Regulatory Commission
MEA	membrane electrode loading	NREL	National Renewable Energy
MEL	miscellaneous electric loads	Ne	Laboratory
MESP	minimum ethanol selling price	NSF	National Science Foundation
Mg	magnesium	NSLS-II	National Synchrotron Light Source- II
MGI	Materials Genome Initiative for Global Competitiveness	NSRCs	Nanoscale Science Research Centers
MHK	marine and hydrokinetic	NSTX-U	National Spherical Torus
MIT	Massachusetts Institute of Technology		Experiment
MITEI	Massachusetts Institute of	NSUF NTRC	Nuclear Scientific User Facilities
	Technology Energy Initiative	NIKC	National Transportation Research Center
MJM	multi-jet modeling	O&M	operations and maintenance
MMT	million metric ton/tonne	OE	U.S. Department of Energy, Office
MOF	metal organic framework		of Electricity Delivery and Energy
MON	motor octane number		Reliability
MOSFET	metal-oxide-semiconductor field- effect transistor	OECD	Organisation for Economic Cooperation and Development
MOSIS	Silicon Metal Oxide Semiconductor	OG&E	Oklahoma Gas & Electric
MRI	Implementation System magnetic resonance imaging	OLCF	Oak Ridge Leadership Computing Facility
MT	metric ton/tonne	OLED	organic light-emitting diode
MV	medium voltage	ORNL	Oak Ridge National Laboratory
MW	megawatt	OT	operational technology
MWe	megawatt electric	PAFC	phosphoric acid fuel cell
MWh	megawatt-hour	PBIH	powder bed and inkjet head
NAS	National Academy of Sciences	PC	pulverized coal
NaS	sodium sulfur	PCCI	pre-mixed charge compression
NASA	National Aeronautics and Space	1 001	ignition
- · -	Administration	PCT	programmable communicating
NCNR	NIST Center for Neutron Research		thermostat

A

PEC	photoelectrochemical	RDD&D	research, development,
PEMFC	polymer electrolyte membrane fuel	DEACT	demonstration, and deployment Rare Earth Alternatives in Critical
PEV	cell plug-in electric vehicle	REACT	Technologies for Energy
pflops	petaflops	RESU	residential energy storage unit
PFSA	perfluorosulfonic acid	RF	radiofrequency
PFTE	polytetrafluoroethylene	RHIC	Relativistic Heavy Ion Collider
PGM	platinum group metals	RIAM	regional integrated assessment model
PHEV	plug-in hybrid electric vehicle	RICE	reciprocating internal combustion
PHS	pumped hydro storage	RICE	engine
PI	process intensification	RNA	ribonucleic acid
PJM	Pennsylvania, New Jersey and	ROI	return on investment
	Maryland Regional Transmission Operator	RON	research octane number
PM	particulate matter	ROZ	residual oil zones
PM ₁₀	particulate matter less than 10	Ru	ruthenium
	micrometers in diameter	SAIDI	system average interruption duration index
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter	SAIFI	system average interruption
PMU	phasor measurement units	JAIFI	frequency index
PNNL	Pacific Northwest National	SANS	small angle neutron scattering
	Laboratory	SC	U.S. DOE Office of Science
Poly/Comp POTW	polymer composites publicly owned treatment work	SCADA	supervisory control and data acquisition
PP	plaster-based 3D printing	SC-ASCR	U.S. DOE Office of Advanced
PPPL	Princeton Plasma Physics		Scientific Computing
	Laboratory	SC-BER	U.S. DOE Biological and Environmental Research Program
PQ	power quality	SC-BES	U.S. DOE Office of Basic Energy
PUE	power use effectiveness	00 220	Science
PV	photovoltaic	SCC	social cost of carbon
PWR	pressurized water reactor	SC-FES	U.S. DOE Office of Fusion Energy
QCD	quantum chromodynamics		Science
QER QOOH	Quadrennial Energy Review hydroperoxyalkyl	SC-HEP	U.S. DOE Office of High Energy Physics
QTR	Quadrennial Technology Review	SciDAC	Scientific Discovery through
quad	quadrillion British thermal units		Advanced Computing
QUEST	Quantification of Uncertainty in	SC-NP	U.S. DOE Office of Nuclear Physics
	Extreme Scale Computations	sCO ₂	supercritical carbon dioxide
R&D	research and development	SDAV	scalable data management, analysis and visualization
R2R	roll-to-roll	SEP	Superior Energy Performance
RAP	resilience analysis process	JLI	Program
RC	Rankine cycle engine	SFR	sodium-cooled fast reactor
RCCI	reactivity controlled compression ignition	SGIG	Smart Grid Investment Grant
RCSP	Regional Carbon Sequestration Partnerships	SHS	Program selective heat sintering
RD&D	research, development, and	Si	silicon
	demonstration	SI	spark ignition

Si/LMRNMC lithium- and manganese-rich high-TWh/year terawatt-hours per year energy cathode with silicon alloy UC unit of capacity anodes UCC ultra-conductive copper SiC silicon carbide **UCPTE** Union for the Coordination of **SIEGate** Secure Information Exchange Production and Transmission of Gateway Electricity SLA stereolithography UE unit of energy SLAC SLAC National Accelerator UNF used nuclear fuel Laboratory **UNFCCC** United Nations Framework SLS selective laser sintering Convention on Climate Change **SMES** superconducting magnetic energy UOG unconventional oil and gas storage **URCI** universal remote circuit interrupter **SMR** small modular reactors USB universal serial bus SMR steam methane reforming USDA U.S. Department of Agriculture **SNCR** selective non-catalytic reduction **USGS** U.S. Geological Survey SNL Sandia National Laboratory UV ultraviolet SNS Spallation Neutron Source V&V verification and validation SO, sulfur dioxide V₂B vehicle-to-building SOC state-of-charge V2G vehicle-to-grid SOFC solid oxide fuel cell V2I vehicle-to-infrastructure SO sulfur oxides V2V vehicle-to-vehicle **SPP** Strategic Partnership Projects VAR volt-ampere reactive **SRF** superconducting radio frequency **VERA** Virtual Environment for Reactor **SSDT** solid state distribution transformer Application **SSRLS** Stanford Synchrotron Radiation **VFD** variable frequency drive Light Source voc volatile organic carbon SST solid-state transformer **VOCs** volatile organic compounds ST steam turbine VVO volt/volt ampere reactive **STP** set top boxes (for TVs) optimization **SubTER** Subsurface Technology and W/ka watts per kg Engineering Research WACC weighted average capital cost **SUPER** Institute for Sustained Performance, WAG water-alternating-gas Energy, and Resilience WBG wide bandgap T&D transmission and distribution Wh/kg watt-hours per kg ТВ terabyte Wh/I watt-hours per liter **TBtus** trillion British thermal units WHP waste heat to power **TCEP** Texas Clean Energy Project WHR waste heat recovery Tcf trillion cubic feet **WNUF** Wireless National User Facility **TEDF** Technology and Engineering ZNE residential zero-net-energy Development Facility customer **TEG** thermoelectric generators TI technology innovation **TJNAF** Thomas Jefferson National Accelerator Facility **TMF** The Molecular Foundry TR technology roadmapping Technology Readiness Levels **TRLs**

TWh

terawatt-hour