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**COMMENTS OFFERED REGARDING THE ADOPTION BY THE CONSTRUCTION INDUSTRIES COMMISSION
OF THE 2021 ENERGY CONSERVATION CODE**

OFFERED BY REBECCA PUCK STAIR, DIRECTOR and HAROLD TRUJILLO, PE, ENGINEERING BUREAU CHIEF,
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AND NATURAL RESOURCES DEPARTMENT

The Construction Industries Commission should adopt the 2021 Energy Conservation Codes as presented, taking into account two suggested technical clarifications (detailed on page 5).

The Energy Conservation and Management Division (ECMD) underscores that New Mexico's building codes must keep up with current energy efficiency and renewable energy technologies that reduce harmful greenhouse gas emissions and improve air quality. Current solar photovoltaic electricity generation, battery storage, and efficient equipment and appliance technologies can reduce building energy consumption to nearly net zero; our state's building energy conservation codes should reflect/support the opportunity this technology provides.

ECMD believes that adoption of the 2021 Energy Conservation Codes will provide the following benefits to New Mexico, based on a 2021 study conducted by the Pacific Northwest National Laboratory (attached as reference):

- The 2021 Codes will provide statewide energy savings of 12% across all climate zones, compared to the current energy codes.
 - This equates to \$258 of annual utility bill savings for the average New Mexico household.
 - The statewide energy cost savings the first year after implementation of the 2021 Code is estimated at \$1,891,000.
- Over the next thirty years, adopting the 2021 Codes will avoid 11.18 million metric tons of CO₂ emissions, the equivalent of taking 1,470,000 cars off the roads.
- Adoption of the 2021 Codes will spur the creation of construction industry jobs – more than 150 in the first year.
- The inclusion of provisions in the 2021 Codes to make new buildings ready to charge electric vehicles supports the evolving electric vehicle market in New Mexico, aligns with the state's efforts to decarbonize the transportation sector, and reflects the Advanced Clean Cars II rule

adopted by the New Mexico Environmental Improvement Board and the Albuquerque Bernalillo County Air Quality Control Board on November 16, 2023.

The following technical information is offered in support of ECMD’s comments.

ECONOMIC BENEFITS – Residential Construction

Based on the Pacific Northwest Laboratory study completed in July 2021, it is **cost effective** to update the New Mexico International Energy Conservation Code from the 2018 to the 2021 editions. New Mexico homeowners will save \$1.15 to \$1.75 for every dollar invested in improved residential construction. See Table 1.

Table 1. Residential Savings VS Cost by Climate Zone 2018 vs 2021 IECC			
Climate Zone	Life Cycle Cost Savings	Construction Cost Increase	Savings to Cost Ratio
3B -Las Cruces	\$ 3,863	\$ 2,196	1.75
4B - Albuquerque	\$ 4,126	\$ 3,410	1.20
5B – Santa Fe	\$ 4,523	\$ 3,913	1.15
<i>Costs are based on Slab-on-Grade construction which accounts for 85.7% of all housing in New Mexico. Natural gas is used to heat 79.4% of all New Mexico housing units.</i>			

ECONOMIC BENEFITS – Commercial Construction

Based on the Pacific Northwest Laboratory study completed in July of 2021, it is **cost effective** to update the commercial section of the New Mexico International Energy Conservation Code (IECC) from the 2018 to the 2021 editions. Please note that there are **reductions in construction costs** for all commercial construction types. Construction costs will be reduced by the need for smaller heating and cooling systems and new lighting LED technology that lasts longer and use much less electricity. **New Mexico Commercial Building Developers will save between \$0.37 to \$1.89 per square foot in construction costs by complying with the 2021 IECC.** See Table 2.

**Table 2 - State Average Savings
(Dollars per Square Foot)**

	Small Office	Large Office	Stand-alone Retail	Primary School	Small Hotel	Mid-Rise Apartment
Life-Cycle Cost Savings	\$ 3.19	\$ 2.81	\$ 3.59	\$ 3.63	\$ 12.07	\$ 1.70
Reduction of Construction Costs	\$ 1.64	\$ 1.77	\$ 1.24	\$ 1.89	\$ 0.62	\$ 0.37

ENVIRONMENTAL BENEFITS – Residential and Commercial Construction

Under Executive Order 2019-003, New Mexico's objective is to achieve a statewide reduction in greenhouse gas emissions of at least 45% by 2030 as compared to 2005 levels. Adopting the 2021 Codes would reduce greenhouse gases by 20,522 metric tons of CO₂ in the first year and by **11.18 million metric tons over the next 30 years**. See Table 3.

**Table 3 - Statewide Emissions Reductions
(Metric Tons)**

Emission Type	First Year Reduction	30-year Cumulative Reduction
CO₂	20,522.00	11,189,000.00
NO_x	14.44	7,854.00
SO_x	6.83	3,535.00

**Emissions calculated using EPA Avoided Emissions and GeneRation Tool (AVERT) 2020 version.*

ECONOMIC BENEFITS – Electric Vehicles

The new rules adopted by the Environmental Improvement Board (EIB) and the Albuquerque Bernalillo County Air Quality Control Board (AQCB) will encourage New Mexicans to purchase **zero-emissions vehicles (ZEVs)**. These rules are predicted to ensure that New Mexicans will:

- Save \$300 million from vehicle lifetime fuel savings and lower maintenance costs by 2050;
- Save up to \$62 million in health care costs with almost 70% occurring in Bernalillo County by 2050. Health savings are attributed to the reduction in air pollution that impairs lung function.

Furthermore, emissions of carbon dioxide will be reduced by 62%, nitrogen oxides reduced by 43%, and particulate matter reduced by 24% in the transportation sector. These air pollutants can trigger asthma attacks, increase risk of heart disease, and increase smog/haze.

Charging infrastructure for these vehicles is necessary. The EV-readiness provisions in the proposed 2021 Codes will ensure infrastructure is available for New Mexicans to charge their zero-emissions vehicles where they live and work, with the former being where the majority of EV charging occurs.

TECHNICAL CLARIFICATIONS REQUESTED

1. Requirements for additional efficiency package options.

As presented, the 2021 Codes have removed Section R402.1.5. This section stated how many additional efficiency packages are required. By deleting Section R401.2.5 there is no indication of how many items are required to be selected from R408, essentially meaning that no measures are required. If this was not the intent of the code drafters, R401.2.5 should be added back into the new Code, as efficiency package options are helpful to builders to comply with the new energy code.

2. An updated Heating Degree Days (HDD) and Cooling Degree Days (CCD) table must be included in the new Code to match our current weather trends.

As presented, the current weather table in the proposed 2021 Code reflects climate data compiled before the adoption of the NM 2009 IECC. In the past fifteen years, climate change has significantly shifted New Mexico's average weather patterns. For example, the Santa Fe climate zone (Zone 5) is becoming warmer and dryer, approaching and beginning to match Zone 4 weather in Albuquerque. In addition, Santa Fe saw 2782 cooling degree days in 2021. **It had "0" CCD based on data collected before 2009.** See Tables 4 and 5. ECMD suggests updating the current weather table.

Table 4 - Heating Degree Day Table		
	2009 – 2018 Energy Code	Proposed 2021 Energy Code
Las Cruces – Climate Zone 3	3223	3645
Albuquerque – Climate Zone 4	4332	4090
Santa Fe – Climate Zone 5	6001	5346
<i>Note: Climate Zone 4 boundary is 5400 HDD.</i>		

Table 5 – Cooling Degree Day Table		
	2009 – 2018 Energy Code	Proposed 2021 Energy Code
Las Cruces – Climate Zone 3	5904	4247
Albuquerque – Climate Zone 4	4462	3934
Santa Fe – Climate Zone 5	0	2782