

## Annual Report – 2020

### EMD Uranium Committee: Uranium Drives Nuclear Power in the U.S. and the World

Michael D. Campbell, Chair and Supported by Vice Chairs and Advisory Group ([Committee](#))

#### AAPG ACE, Houston, 2020 ((On-Line)

This is a summary of the [2020 Annual Report](#) of the EMD Committee on Uranium (Nuclear and Rare Earths), aka UCOM. A teleconference and Zoom testing were conducted by the Committee earlier this year ([more](#)). **Major News:** A significant rise in [uranium prices](#) is underway since the first of the year. Senior U.S. uranium industry personnel indicate that recent activities concerning [Section 232](#) requesting protection of the U.S. uranium mining industry has gained traction in the [White House](#). Many companies are resuming drilling properties. Numerous discoveries of [high-grade uranium deposits](#) have been made in Canada and new low-grade deposits are under development in [Argentina](#) and [Peru](#). The main Australian uranium mines in [South Australia](#) have resumed operations and mines in [WA](#) are preparing to resume operations. An undeveloped, new uranium “roll front” district has been identified in the [eastern Seward Peninsula of Alaska](#) with nearby alkaline source rocks also containing thorium and rare-earth elements.

There is general agreement that substantial [uranium](#) (and [thorium](#)) will be available to fuel the U.S. as the world's largest fleet of nuclear power and producing more than 30% of worldwide nuclear generation of clean electricity. Some 98 nuclear power plants in the U.S. remain in operation, a few more are scheduled for retirement on the grounds of economics and low-priced natural gas, but two new reactors are being completed in [Georgia](#). Following a 30-year period during which no new reactors were built in the U.S., it is expected that two reactors will come online soon after 2021; others resulting from 16 [license applications](#) made since mid-2007 are proposing to build 24 new nuclear reactors, most of which are of the new small modular reactor (SMR) design. The U.S. produced about 4,015 billion (kWh) of electricity at utility-scale facilities in the U.S. in 2019. Currently, about 63% of the [U.S. electricity generation](#) is from fossil fuels (coal, natural gas, petroleum, and other gases). About 20% was from uranium providing nuclear energy, and about 17% (and rising) was from renewable energy sources of solar and wind, including hydroelectric power plants. [Coal production and burning](#) is falling off rapidly; coal may be useful [without burning](#).

Uranium production cuts were made [in 2019 in the U.S.](#) by the [world's largest uranium producers](#), but [uncovered utility demand](#) is expected to reach ~24% by 2021 and 62% by 2025. Hence, production should resume in the foreseeable future as the uranium price continues to rise. A number of mines in the U.S. ([Texas](#), [Wyoming](#), etc.) are either on stand-by or are available for rapid development.

[China](#) (99 reactors by 2030), [Russia](#) (7 by 2028), [Japan](#) (now upgrading nuclear fleet), and [India](#) have aggressive nuclear power plant building programs underway. Saudi Arabia, South Korea, and UAE are also building nuclear power plants, some will be incorporating the [new SMR designs](#), and “fast breeder” [designs](#) ([Russia](#) and [India](#)) that consumes most [used fuel](#) (waste), and a [Russian floating nuclear power plant](#) for use along the coast of Siberia and in the Arctic (using SMR designs). The [U.S. Navy operates](#) more than 40 ships and submarines with SMR nuclear power plants. Fusion research is progressing ([more](#)).

Many hard-rock uranium deposits also contain associated REEs to the extent that [co-production of raw REEs](#), [thorium](#), and other [critical metals](#) are underway for stockpiling, awaiting shipment to processing sites around the world ([more](#)). Numerous [sources of REE](#) have become evident recently, e.g., in [coal](#), [fly ash](#), and in sea-floor deposits ([more](#)). Research funding by university and industry remains low, but state geological surveys (e.g., [Wyoming](#) and [New Mexico](#)) and the [U.S. Geological Survey](#) are moving forward with robust research projects on uranium and [rare earths](#). Discoveries of a [new uranium mineral](#) occurring like calcrete has been found in west Texas.

The Earth's [radiation environment](#) protected by [magnetic fields](#) continue to be monitored; and more medical applications in the use of radiation have [emerged](#).