= NuScale Power =

NuScale Power is a private limited liability company headquartered in Tigard , Oregon that designs and markets small modular reactors ( SMRs ) . As of 2014 , the Department of Energy projected its technology would be commercially available around the year 2025 .

NuScale was founded based on research funded by the Department of Energy from 2000 to 2003 . After funding was cut , scientists with the program obtained related patents in 2007 and started NuScale to commercialize the technology . In 2011 , the company 's largest investor had its assets frozen due to an investigation by the Securities Exchange Commission . The company experienced financial hardship until new funding was obtained from Fluor Corporation and later from the Department of Energy . NuScale is currently planning the first NuScale power plant in Idaho .

NuScale 's SMR designs are for 9 feet ( 2 @.@ 7 m ) by 65 feet ( 20 m ) reactor vessels that use conventional light water cooling methods . Each module is intended to be kept in an underground pool and is expected to produce about 50 megawatts of electricity . It uses passive water @-@ circulation that can operate without powered pumps or circulatory equipment .

= = Corporate history = =

= = = Early history = = =

NuScale was founded based on research funded by the US Department of Energy and conducted by Oregon State University , the Idaho National Laboratory , and other colleges beginning in 2000 . At the time , Oregon State 's nuclear department had been developing passive water @-@ circulation techniques for cooling in nuclear plants . The research grant ended in 2003 , but a group of scientists at Oregon State University continued the work . They built a test lab at one @-@ third the actual scale of the technology and inherited related patents from the university in 2007 , in exchange for a small equity in the company . NuScale was founded that same year . Its first funding round was in January 2008 for an undisclosed sum . It began seeking certification with the Nuclear Regulatory Commission in February 2008 .

By 2011 , NuScale had raised $ 35 million in financing and had 100 employees in three cities : Tigard , Oregon ; Richland , Washington ; and Corvallis , Oregon . NuScale was the first to submit plans for small reactors to the Nuclear Regulatory Commission and was widely expected to be the first to get government approval . It was also being evaluated by a consortium of utility companies called Energy Northwest .

= = = Funding difficulties and rebound = = =

In January 2011 , NuScale 's largest investor , Kenwood Group , was investigated by the Securities Exchange Commission and later plead guilty to operating a Ponzi scheme . The SEC investigation was not related to any of Kenwood 's dealings with NuScale , but Kenwood 's assets were frozen just as NuScale was expecting additional funding . The company started making staffing and pay cuts as executives looked for new funding sources and most of the company 's employees were laid off within a few months .

That September , NuScale obtained a loan to re @-@ hire 60 employees . In October , Fluor acquired a majority interest in the company for $ 3 @.@ 5 million and promised almost $ 30 million in working capital . According to The Energy Daily , Fluor 's investment saved the company , which had been " financially marooned " by its prior investor . A separate agreement also gave Fluor the rights to construct NuScale @-@ based power plants .

In August 2012 , Rolls @-@ Royce Holdings said it would support NuScale 's commercialization efforts and help it obtain funding from the Department of Energy 's Funding Opportunity Announcement , which is intended to provide funding to help bring SMRs to market . It was not awarded any funding in the first round . In the Department of Energy 's ( DOE ) second round of

funding in December 2013 , NuScale won up to $ 226 million in " cost @-@ sharing " funding to share the expense of pursuing government approval , through the SMR Licensing Technical Support program . This was followed by an agreement in May 2014 for up to $ 217 million in funding over a five @-@ year period , whereby the Department of Energy would match private funding . In December 2012 , co @-@ founder and CEO Paul G. Lorenzini was succeeded by current CEO John Hopkins .

= = = Early deployments = = =

In March 2012 , NuScale signed an agreement with the Department of Energy , allowing NuScale and two partners to build and operate a NuScale @-@ based nuclear power plant at the Savannah River Site . The following month Energy Northwest said it didn 't have any immediate plans to construct a nuclear power plant , but had evaluated all the available SMR technologies and identified NuScale as the best available option at the time .

In July 2013 , NuScale announced an effort to study and demonstrate NuScale reactors in the western United States , called Program WIN ( Western Initiative for Nuclear ) , with plans to build the first NuScale @-@ based power plant in the western United States by 2024 . In November 2014 , NuScale announced it was building what is expected to be the first SMR in the US in Idaho . The plant is for the Carbon Free Power Project with Utah Associated Municipal Power Systems . It is expected to be completed in 2023 .

= = Reactors = =

NuScale designs and markets small modular nuclear reactors that the Department of Energy expects to be commercially available around 2025 . Its designs use the light water approach to cooling and power generation that is common in conventional nuclear plants . Water is heated by the nuclear core at the base of the reactor vessel . Heated water flows upwards inside the riser , then down over steam generators . As heat is transferred to steam generators , the water becomes cooler and denser , sinking back to the bottom of the device , where the cycle is repeated . Heat transferred to the steam generators is used to create steam that turns a turbine , which drives an electrical generator .

Each NuScale reactor vessel is expected to be 9 feet by 65 feet and weigh 650 tons ( 590 metric tons ) . The modules would be pre @-@ fabricated , delivered by railcar , barge or special trucks and assembled on @-@ site . The units are designed to produce 50 megawatts. of electricity each and require refueling with standard 4 @.@ 95 percent enriched Uranium @-@ 235 fuel every two years .

NuScale 's design does not rely on powered water pumps or circulatory equipment . The company claims it can shut down and continue cooling itself indefinitely in the event of a catastrophe . The devices are intended to be kept in a below @-@ ground pool , to absorb the shock of earthquakes , with a concrete lid over the pool . In the event that AC power is lost for normal cooling systems , the pool water begins to absorb heat and boil .

= = = Comparisons = = =

NuScale is expected to be the first SMR to market , because its cooling is similar to the systems used in conventional power plants . However , alternative cooling systems using molten metals are expected to operate at higher , more efficient temperatures once approved . The company estimates a twelve @-@ unit NuScale plant would cost $ 5 @,@ 000 per kilowatt . In comparison , the Energy Information Administration in 2011 estimated costs to be $ 4 @,@ 700 per kilowatt for conventional nuclear power , $ 4 @,@ 600 for a carbon sequestrationcoal plant and $ 931 at a gas @-@ fired plant or in excess of $ 1 @,@ 800 for a gas @-@ fired plant with carbon sequestration . David Mohre , executive director of NRECA 's Energy and Power Division , said SMR 's like NuScale 's are ideal for rural towns that need small power plants and do not have access to natural gas . NuScale

power plants are also expected to take less time , materials and space to construct than other power sources and can be expanded incrementally to meet changing power needs .

= = Operations = =

NuScale has offices in Tigard , Oregon ( near Portland ) ; Corvallis , Oregon ; Charlotte , North Carolina ; and Rockville , Maryland . Its headquarters are in Tigard and its production facility is located in Corvallis . It maintains a test facility at Oregon State University , as well as two additional test facilities in Italy .