

ABSTRACT

5G is the fifth generation of cellular technology, over time more and more countries and telecommunications service providers continue to expand 5G networks. In Indonesia itself, there are already several cities that have installed 5G networks. The deployment of 5G itself must first be carefully analyzed from the technical field as well as from the economic field. This research uses the Urban Micro propagation model and the research area is Semarang City, which is an urban area that is classified as a densely populated large city with an Uplink (UL)) Outdoor to Outdoor (O2O) NonLine of Sight (NLOS) scenario. and Downlink (DL) Outdoor to Outdoor (O2O) NonLine of Sight (NLOS). The simulation results show that the SS-RSRP value that has been measured for the downlink scenario shows the smallest average strength SS-RSRP value of -81.46 dBm and a SINR value of 12.71 dBm. Meanwhile for scenario 2, namely Uplink, shows an average power value of -90.87 and a SINR value of 10.36 dBm. This value can be said to be quite good. In the economic calculation, the NPV value of the uplink optimistic scenario is Rp. Rp. 19,450,645,939.19 with an IRR value of 10.78% and a downlink of Rp. -(44,836,103,259) while the IRR value is not defined. Furthermore, in the moderate NPV scenario value, the results obtained are IDR. - (7,182,275,276.28) with an IRR value of -5.51%. for the uplink and Rp - (102,084,597,638) and the IRR value is too small for the downlink. And in the pessimistic scenario with results of Rp. -(114,573,811,672.42) on the uplink and Rp. - (178,860,560,871) on the downlink. The IRR of the pessimistic scenario is too small. Referring to the results of 5G NR deployment in the city of Semarang, it can be said that it is not feasible with the result being an $NPV < 0$, only uplinks in the optimistic scenario have $NPV > 1$.

Keywords: 5G NR, Coverage Planning, CAPEX, OPEX, NPV, IRR