%runfile /Users/juanramonjimenezmogollon/Downloads/Improve\_Hornsrev1\_Layout\_JRJ\_14\_03\_2025V2.py --wdir

Enter Site to be used 1-IEA37, 2-Hornsrev1, 3-UniforSite: 1

Enter Iteration Lenght in meters: 10

Enter Number of Iterations on each Generation: 400

Enter Number of Genetic Generations: 15

Enter border aditional distance from actual laylout in m: 30

Original AEP: 715.702891 GWh

Best solution on reference layout randomized Generation 0:

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aep\_best\_sol on reference layout randomized Generation 0: 715.7077267412863

Iteration Length ... Fitness Function\_xy\_sol

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1 0 ... 714.973572

2 0 ... 714.978000

3 0 ... 715.010434

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1199 2 ... 715.389607

[1200 rows x 4 columns]

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aep\_best\_sol on Genetic Generation 1: 715.7204030376025

Best solution on Genetic Generation 2:

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aep\_best\_sol on Genetic Generation 2: 715.7511661648232

Best solution on Genetic Generation 3:

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aep\_best\_sol on Genetic Generation 3: 715.8199594360559

Best solution on Genetic Generation 4:

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aep\_best\_sol on Genetic Generation 4: 715.9029738601307

Best solution on Genetic Generation 5:

([423967.8400158707, 424037.4945502553, 424104.17240555264, 424181.8504480144, 424224.3664391846, 424286.5034137793, 424375.9098972872, 424445.2628086394, 424528.3394800985, 424600.93869665713, 424674.58705509297, 424748.79568061605, 424807.2873830096, 424873.9827094295, 424942.43525471026, 425023.3788636535, 425096.84625499614, 425159.5293487284, 425240.4348420713, 425285.2800130317, 425364.4786927767, 425436.57928688533, 425499.5592653318, 425575.86914971244, 425651.31454468105, 425725.5454839636, 425780.72771756485, 425843.74760881613, 425924.89779873943, 425992.8917082892, 426076.7735285904, 426146.31997039693, 426207.99736424047, 426283.92646286206, 426354.372233125, 426425.2955184629, 426479.3194519641, 426540.12316405564, 426611.9251290533, 426678.97418210417, 426766.29596650717, 426824.2493111221, 426905.3298328805, 426982.2668668781, 427035.54992459866, 427105.0535886166, 427192.0959981851, 427253.73341678624, 427335.55717393383, 427405.56798910757, 427467.27299746, 427538.7306336171, 427607.86346567376, 427681.79387987003, 427751.3624380142, 427832.9875145298, 427903.35431513475, 427968.9272300533, 428040.97674901003, 428093.5666887324, 428174.53357245895, 428234.1905164976, 428305.86437798437, 428355.5952608857, 428449.9336851775, 428524.34470025904, 428583.9332528185, 428674.5951339785, 428741.27482789644, 428795.88474776444, 428855.5797101204, 428914.05477212666, 429027.73999573884, 429104.4646935698, 429167.22028941073, 429227.59965563886, 429283.30136887607, 429352.129410706, 429433.3262123492, 429499.12366288697], [6151456.333396659, 6150907.547780926, 6150336.195508045, 6149787.595782114, 6149222.621443447, 6148666.355453724, 6148108.225735533, 6147550.1135591995, 6151466.169969974, 6150893.198431167, 6150354.601198823, 6149781.577066419, 6149217.18470948, 6148672.969380141, 6148099.342353495, 6147561.822992989, 6151460.458287418, 6150897.346548035, 6150348.498187747, 6149772.536503764, 6149216.132589562, 6148676.057551748, 6148102.325903061, 6147560.388882675, 6151451.205415855, 6150898.484814529, 6150338.143630355, 6149788.994245686, 6149224.489791359, 6148661.843357273, 6148100.555098819, 6147553.679864987, 6151458.62502051, 6150895.82808422, 6150329.718140648, 6149772.481672844, 6149228.766196101, 6148668.4595970865, 6148099.084408396, 6147535.108111332, 6151466.788141753, 6150908.194656624, 6150326.589393612, 6149765.501328227, 6149233.423060242, 6148679.561568597, 6148104.09783539, 6147541.725716279, 6151464.759531749, 6150893.023525477, 6150322.281993142, 6149775.319136242, 6149226.523848887, 6148652.31149142, 6148109.548043052, 6147553.062760355, 6151454.907991506, 6150892.449167029, 6150321.320771457, 6149786.168497833, 6149214.687664531, 6148663.858371228, 6148106.169921393, 6147543.864086526, 6151469.535711769, 6150892.480645844, 6150345.941223424, 6149781.891310146, 6149224.413613169, 6148673.206907425, 6148117.21591825, 6147537.1792684365, 6151455.911687646, 6150888.922542042, 6150332.109616179, 6149772.973382452, 6149215.590371549, 6148679.727245608, 6148103.088001205, 6147548.638170786])

aep\_best\_sol on Genetic Generation 5: 716.0383604683178

Best solution on Genetic Generation 6:

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aep\_best\_sol on Genetic Generation 6: 716.1602424782368

Best solution on Genetic Generation 7:

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aep\_best\_sol on Genetic Generation 7: 716.2332554197852

Best solution on Genetic Generation 8:

([423963.0144592664, 424030.47091014194, 424092.89885892364, 424173.67424582405, 424224.57986600074, 424290.2509051388, 424367.92934453604, 424436.695862535, 424530.22547011037, 424601.6238779275, 424677.6738729046, 424749.77475989115, 424807.87360406003, 424874.2196476927, 424946.83843782987, 425022.852724738, 425106.0308150247, 425172.82334010256, 425240.5360656364, 425292.7329015041, 425371.8776291193, 425427.6020293261, 425505.69476633554, 425572.1502639456, 425649.3961687839, 425725.7451722198, 425769.4313493359, 425841.01031790825, 425921.2012549146, 425999.0662997513, 426083.64782188815, 426139.4449392011, 426199.18910783384, 426280.4651932393, 426367.0673006375, 426430.52052929054, 426475.99162733275, 426536.61246613396, 426601.80636243493, 426673.1233903787, 426775.8672330679, 426829.90780753165, 426900.69223722146, 426964.9485565015, 427034.1962229738, 427106.2145138974, 427186.29864401557, 427249.8809276769, 427333.9974515249, 427409.59611158026, 427467.03199953976, 427534.83164932136, 427612.2319744532, 427689.7993341621, 427745.6005439439, 427829.21331986715, 427915.0190527915, 427968.2444378177, 428039.9608112027, 428081.88337805006, 428168.14737144444, 428237.316595734, 428300.58583547093, 428362.1402281559, 428452.51621452475, 428522.4714829637, 428589.05641646317, 428676.10839943594, 428733.6453604337, 428786.11237646104, 428864.381111309, 428916.92023672187, 429041.9746094071, 429111.3492653287, 429170.1712232382, 429242.25135642575, 429288.0350388364, 429358.06504127965, 429431.6405087454, 429509.89734898775], [6151456.271489732, 6150903.880282871, 6150334.374788883, 6149791.289595649, 6149224.211824357, 6148659.697679181, 6148108.768337656, 6147542.174276789, 6151466.583148642, 6150887.0613357, 6150350.521281996, 6149783.695363896, 6149229.03338223, 6148679.325832349, 6148096.867435747, 6147558.181469982, 6151476.003365168, 6150900.786046235, 6150349.6218070425, 6149770.100838236, 6149215.5840675635, 6148667.3684551325, 6148095.776025341, 6147562.9396140855, 6151462.862736822, 6150896.852946316, 6150343.948151644, 6149781.42234562, 6149221.370331166, 6148670.80932614, 6148109.800378051, 6147548.7497961, 6151447.133954111, 6150904.327017836, 6150327.072661275, 6149770.032219143, 6149221.801330159, 6148664.7917241175, 6148109.946988309, 6147543.340286486, 6151462.233745509, 6150913.854543539, 6150327.835226194, 6149769.030339171, 6149233.615617997, 6148671.849917881, 6148104.737601066, 6147542.412853044, 6151469.348457867, 6150898.698823862, 6150321.554184653, 6149771.014930053, 6149224.406732668, 6148653.012279015, 6148115.750906935, 6147534.180659177, 6151459.918955332, 6150892.754208969, 6150330.54582773, 6149775.231302473, 6149204.328547432, 6148666.34169875, 6148097.933561098, 6147540.212557312, 6151473.72367204, 6150888.049832832, 6150338.720229132, 6149777.688849963, 6149227.596521709, 6148680.926568165, 6148105.247788511, 6147530.158031032, 6151461.128868944, 6150884.499684895, 6150327.410627151, 6149775.638921938, 6149208.742395036, 6148693.009372285, 6148116.590456619, 6147542.221156638])

aep\_best\_sol on Genetic Generation 8: 716.3440008703278

Best solution on Genetic Generation 9:

([423962.827513004, 424024.0007287603, 424094.0178464217, 424169.1393167121, 424231.5628460857, 424288.65280594246, 424362.0168397814, 424432.1847939571, 424531.7647899713, 424602.1787167845, 424679.8354141384, 424748.58951893647, 424803.698174085, 424873.4912693801, 424949.2985115576, 425029.42501839, 425110.1427812347, 425173.4904009013, 425247.3531273324, 425291.26510710036, 425366.28009885194, 425429.9197610692, 425508.95846682653, 425574.403500455, 425649.51124294667, 425720.6105978607, 425767.17397490743, 425845.1890920105, 425916.7814521103, 426002.6146746122, 426084.13840456057, 426143.49685600674, 426197.22017067805, 426286.9761496186, 426366.5983778855, 426423.66689258785, 426478.9859735217, 426532.86059416784, 426605.1422302373, 426679.85899564397, 426779.00795760396, 426824.6260037583, 426901.63525360776, 426960.5493561619, 427032.13998284435, 427104.6077456962, 427190.95626796474, 427249.53797165875, 427335.95236189873, 427410.8306955725, 427466.7839228845, 427532.1601455437, 427610.8134901292, 427686.9709829085, 427742.9467614053, 427822.72385332384, 427917.6039655519, 427973.2653697745, 428035.364795067, 428078.53482357995, 428163.20634486544, 428234.1335509904, 428302.0429645599, 428357.12045974087, 428457.1639575014, 428525.2514951199, 428592.04447085643, 428681.0035126872, 428735.06300798006, 428781.6363466577, 428860.31468336185, 428910.0900445341, 429036.2141186649, 429107.15511503496, 429170.2326268774, 429246.5955588742, 429294.3280366884, 429356.0616891515, 429432.11456680263, 429511.5043934788], [6151459.634779847, 6150901.156465153, 6150338.731802602, 6149792.087634046, 6149228.961028746, 6148654.392351886, 6148102.4131088555, 6147541.8497521775, 6151461.92970013, 6150880.194793002, 6150345.988851306, 6149779.341728587, 6149223.255123071, 6148672.920674059, 6148093.944740266, 6147552.449616017, 6151474.420130392, 6150900.793806185, 6150342.635390042, 6149773.703724222, 6149209.517233342, 6148660.842035111, 6148091.036902768, 6147557.2666465, 6151463.190385953, 6150903.655082755, 6150349.504399698, 6149774.981520347, 6149219.761099053, 6148666.951800062, 6148114.3064326, 6147542.797719785, 6151452.937947692, 6150897.450148548, 6150333.591024997, 6149776.880861215, 6149226.960963778, 6148663.515752181, 6148114.767509885, 6147537.050912817, 6151458.45965234, 6150910.274094444, 6150324.052742681, 6149770.357462919, 6149234.9023068715, 6148665.911781868, 6148105.379260423, 6147544.939405512, 6151465.735519778, 6150903.312245419, 6150320.705520888, 6149775.5820411015, 6149220.485120438, 6148657.543160923, 6148118.550796904, 6147531.875426527, 6151465.153126285, 6150894.5087193, 6150335.03882471, 6149778.2291068155, 6149210.920697715, 6148663.7807126, 6148095.618240306, 6147534.659786364, 6151471.811299468, 6150892.75384153, 6150345.470841321, 6149778.631653302, 6149234.104531279, 6148678.6910165865, 6148105.717900271, 6147535.542489289, 6151457.837184853, 6150890.93356418, 6150326.32022461, 6149775.036873335, 6149203.90415154, 6148688.057739878, 6148114.442308832, 6147537.441471691])

aep\_best\_sol on Genetic Generation 9: 716.4579685400911

Best solution on Genetic Generation 10:

([423957.82295794494, 424025.4074067848, 424096.82776775706, 424162.8338576416, 424237.8372034356, 424292.83760551666, 424357.00962829107, 424425.97755015385, 424531.3188720752, 424608.03045470215, 424677.9751435155, 424742.40337000124, 424800.1832825545, 424871.6140746487, 424952.0964613689, 425032.4104829011, 425113.9419498725, 425175.32118132815, 425251.6532511563, 425296.7549787681, 425363.44783141755, 425426.83650821523, 425506.6291914837, 425578.95959267026, 425655.913761233, 425715.34972151654, 425771.56848053477, 425849.8721876477, 425912.70596512716, 425998.49059152714, 426082.04883446876, 426136.66058904206, 426192.9783938887, 426289.2841952739, 426372.3446691528, 426424.69214769, 426485.2916275609, 426529.65648132365, 426599.1600820032, 426677.1833760906, 426774.7289335432, 426829.9285808952, 426900.3034648375, 426965.4218800937, 427037.0946559956, 427104.25814364146, 427186.21678352886, 427243.19884679565, 427337.8135740658, 427409.1376299009, 427460.08415606385, 427525.6679122354, 427613.63642808923, 427686.2419342129, 427737.97202056483, 427816.45602790115, 427913.1947963434, 427970.259255009, 428041.54048466886, 428082.2254228649, 428162.0046903072, 428234.84073130833, 428299.5008311698, 428351.08045604563, 428458.32842808147, 428528.01625130826, 428598.8449989037, 428681.44378841604, 428740.3556761427, 428781.7958183602, 428861.6106233544, 428908.3077664693, 429040.04978623794, 429110.047691076, 429165.5542966856, 429246.3883153181, 429290.4818994067, 429358.9156802413, 429431.57107000245, 429506.40296008816], [6151455.356726468, 6150903.529060339, 6150337.847675128, 6149789.385869457, 6149224.931301596, 6148660.484170361, 6148102.445974936, 6147535.145852961, 6151459.81882371, 6150885.516591178, 6150344.671095794, 6149774.174804752, 6149225.328751819, 6148671.069871589, 6148100.117346478, 6147548.941756659, 6151470.452764671, 6150901.310216969, 6150344.831828779, 6149770.171531582, 6149215.488681258, 6148659.367858322, 6148090.479053323, 6147555.956119155, 6151467.858910541, 6150904.781758546, 6150349.990543561, 6149776.033554587, 6149215.51081625, 6148667.766830808, 6148111.534900423, 6147543.223127202, 6151450.685966536, 6150893.248944535, 6150336.818104954, 6149781.996811545, 6149232.082215288, 6148666.989295157, 6148113.020848965, 6147537.005637555, 6151462.564326259, 6150905.431517796, 6150326.4925575685, 6149776.030628531, 6149227.978030151, 6148672.614674327, 6148100.577714373, 6147549.348761562, 6151470.360172609, 6150898.232476105, 6150324.49742784, 6149781.739718416, 6149222.979341427, 6148657.033759086, 6148112.807270587, 6147536.801413607, 6151470.8037953535, 6150887.761866261, 6150336.370096272, 6149784.381672419, 6149206.53374742, 6148658.528425048, 6148099.696832586, 6147530.858931544, 6151469.036407789, 6150887.855041884, 6150339.682330238, 6149782.697679925, 6149229.4683840675, 6148680.166427903, 6148102.38981964, 6147530.191365872, 6151462.463022209, 6150889.14265593, 6150319.651684291, 6149772.991903882, 6149204.137337183, 6148690.36882787, 6148113.781533891, 6147541.486586462])

aep\_best\_sol on Genetic Generation 10: 716.4991971521513

Best solution on Genetic Generation 11:

([423957.04698257544, 424022.5806003377, 424096.08368948416, 424165.76723669, 424234.99528127693, 424299.5754502249, 424352.7562608119, 424427.85223732964, 424525.3069708424, 424605.85853953153, 424673.8486590309, 424739.6214356778, 424797.80370177183, 424864.6187344841, 424946.03916911344, 425027.6510951004, 425117.0920913708, 425172.8705055506, 425245.1424876512, 425298.6553994059, 425368.92951503413, 425423.666853483, 425504.968252118, 425576.84200714267, 425661.2311160639, 425712.2043783855, 425775.6723916272, 425855.3990201389, 425913.4086167083, 425994.1200643095, 426077.3971790548, 426139.47084258386, 426199.9002351766, 426283.46100885334, 426370.77227399475, 426427.5878639938, 426480.0132737236, 426524.37917969533, 426599.7346575653, 426673.5511207651, 426778.24887850665, 426833.6829354811, 426894.6047519677, 426966.46729272784, 427030.7812868664, 427100.84690773184, 427188.7845754941, 427241.32969891874, 427339.1385276856, 427403.94256648765, 427461.3584633448, 427525.7165950666, 427609.60268215626, 427689.70100239024, 427737.7335305518, 427823.12082959583, 427918.7828751479, 427966.68501372903, 428047.11434547364, 428081.6503479892, 428163.8722055021, 428234.97014819196, 428303.67071951827, 428357.0170249985, 428458.4297034694, 428530.06638477143, 428598.0561509812, 428675.38991619385, 428736.3144696798, 428786.87283072167, 428860.6019056682, 428912.107121051, 429043.33697257494, 429112.81827845384, 429171.8571457941, 429249.69981938665, 429291.3940640108, 429357.7475855486, 429435.6047435179, 429509.2679639321], [6151461.061350872, 6150899.2978237765, 6150340.997777205, 6149788.000627614, 6149229.545764026, 6148664.1299813995, 6148107.374982093, 6147529.001300563, 6151461.480628486, 6150888.425247421, 6150347.321865758, 6149770.16520826, 6149219.905861039, 6148675.401976944, 6148100.3479801435, 6147545.5178418355, 6151463.742729614, 6150897.840211679, 6150345.075481334, 6149767.492414832, 6149209.987661275, 6148662.725942197, 6148086.946148096, 6147554.35192337, 6151468.946919392, 6150905.735217427, 6150354.725621164, 6149770.277969302, 6149212.921380368, 6148674.632606774, 6148106.873535024, 6147549.130417103, 6151445.195908252, 6150899.054639626, 6150336.713244098, 6149780.79367924, 6149227.1723916745, 6148662.804335437, 6148111.766610996, 6147536.39670758, 6151461.0073908735, 6150899.686988159, 6150320.745615586, 6149781.070783799, 6149232.3398063425, 6148667.208039849, 6148099.385791131, 6147552.831670656, 6151472.99187505, 6150892.078290085, 6150324.675489622, 6149778.889160877, 6149226.79228756, 6148652.630244413, 6148106.690216631, 6147534.160267074, 6151471.125267299, 6150893.574566044, 6150338.836999454, 6149786.130863263, 6149208.867613996, 6148663.366827845, 6148100.897361606, 6147526.349732266, 6151468.067965635, 6150881.9891646495, 6150333.311668687, 6149788.175514386, 6149230.396248207, 6148687.104843258, 6148099.499410401, 6147532.91179894, 6151455.750509443, 6150884.537190367, 6150313.989554032, 6149769.166138938, 6149208.636802622, 6148688.822495379, 6148107.515998719, 6147544.310016557])

aep\_best\_sol on Genetic Generation 11: 716.5358227936207

Best solution on Genetic Generation 12:

([423952.7513818024, 424017.8627964911, 424090.6675797697, 424161.397665609, 424235.7224520826, 424292.7484961804, 424353.57916859584, 424423.0240393552, 424527.96987690125, 424606.12859601836, 424675.98753290594, 424741.74858446704, 424798.8645294464, 424862.5426969641, 424952.09038617887, 425024.14276591525, 425121.85769035487, 425171.09084872063, 425241.89168108045, 425292.12992934795, 425368.50319661817, 425418.46953817824, 425507.6407270874, 425573.9658641154, 425665.6303763073, 425708.7661409506, 425773.3356391799, 425849.3170702132, 425910.59997086297, 425990.91044957424, 426084.3360693436, 426132.6992663429, 426202.3444237418, 426285.15002422465, 426366.78567834623, 426420.9423918937, 426478.512538597, 426527.7196853627, 426597.0507822261, 426675.2530881076, 426776.75967566477, 426840.4082402511, 426895.9654170102, 426963.1420932386, 427027.0553078535, 427100.5830217334, 427188.06585184217, 427238.12474393676, 427333.5097277165, 427401.5855466928, 427460.19656659337, 427522.98704992514, 427604.15027990134, 427693.0376385674, 427741.2612643561, 427826.0685391907, 427920.38418968266, 427970.17128528847, 428043.7493843045, 428080.66982237826, 428169.42152305576, 428236.54924697574, 428303.8775207925, 428362.8912632583, 428453.21260261623, 428533.175320183, 428598.71590924414, 428670.23666997143, 428733.22935645585, 428791.317144626, 428867.57793972077, 428913.0107501394, 429042.6062225362, 429106.09408006, 429178.85398597276, 429246.8363141525, 429285.86303948815, 429358.7732806095, 429438.3212466792, 429513.67304438783], [6151459.23868761, 6150904.236397238, 6150334.291223208, 6149787.522842213, 6149230.493113972, 6148665.004900827, 6148109.909803392, 6147529.398095773, 6151462.975296377, 6150892.164146093, 6150341.729017119, 6149776.360088128, 6149225.39878241, 6148669.438575881, 6148100.7168737445, 6147549.799013392, 6151467.952338782, 6150902.063616929, 6150345.558576671, 6149767.269124639, 6149208.41580948, 6148666.205395288, 6148093.937934429, 6147548.102117274, 6151473.639158876, 6150909.679549076, 6150356.967764833, 6149773.258373682, 6149215.343940605, 6148671.626824855, 6148112.251330593, 6147545.8335998645, 6151446.018982783, 6150900.207048671, 6150337.694194622, 6149779.375139604, 6149222.561900065, 6148666.06722275, 6148111.716254943, 6147534.328095164, 6151454.721220168, 6150904.002527263, 6150321.4532693345, 6149787.5678204335, 6149238.016678352, 6148669.41679047, 6148095.80377703, 6147549.384063119, 6151473.982204684, 6150896.8373912405, 6150323.650984112, 6149777.519818488, 6149226.595186734, 6148648.142387818, 6148106.192491901, 6147537.9898793055, 6151464.852062513, 6150892.905651841, 6150345.382729264, 6149781.662380764, 6149207.3775952365, 6148667.12120062, 6148094.602684846, 6147527.585445363, 6151474.00276236, 6150883.250285516, 6150330.283659997, 6149786.280769936, 6149224.808892853, 6148693.0648792675, 6148104.063916835, 6147526.44356724, 6151450.214147251, 6150887.020302798, 6150312.706594034, 6149775.241849955, 6149215.343509084, 6148686.835945318, 6148102.503772451, 6147546.301231154])

aep\_best\_sol on Genetic Generation 12: 716.5637997021528

Best solution on Genetic Generation 13:

([423958.1942169355, 424017.504188043, 424095.006916401, 424157.4789826137, 424231.3171519885, 424294.83449327596, 424352.2415975906, 424425.0317130296, 424530.9592502331, 424600.37289881887, 424675.3789082415, 424747.12224758934, 424801.52241792076, 424867.3127690867, 424956.09341611323, 425030.71626498963, 425122.2698718103, 425169.95793071046, 425239.06647503795, 425296.65492928535, 425368.0673052892, 425413.52884036885, 425508.6329613452, 425580.5868439075, 425670.48017331446, 425708.4866208647, 425770.29239489033, 425846.05049327324, 425904.60766153154, 425988.42554708035, 426091.00504095614, 426132.69680307386, 426206.78447263036, 426289.4748084727, 426364.06639928435, 426415.0330438467, 426485.3161744937, 426529.7610488841, 426601.7017772337, 426673.1895867508, 426770.73564727657, 426842.97174761846, 426892.99745470873, 426960.9457388025, 427026.245411961, 427106.3248835549, 427184.39254364296, 427231.46483667404, 427336.33162177476, 427401.8058971668, 427458.5155323815, 427522.8234764416, 427602.70332697214, 427696.2111694172, 427748.0711266841, 427819.8999426879, 427921.63998033636, 427976.6650068102, 428045.0147651562, 428079.387596945, 428176.03618112585, 428240.4248469573, 428300.7495164388, 428357.60021469265, 428454.858942736, 428534.66694331245, 428605.3926177991, 428663.7688635172, 428726.9100383399, 428787.9084420226, 428866.79784561426, 428919.98422858777, 429045.487401782, 429104.72375245794, 429181.2683603582, 429245.92079211137, 429290.2594680065, 429360.4372083234, 429444.70551351435, 429509.34051870526], [6151465.85122286, 6150899.860128762, 6150333.893588396, 6149786.786112658, 6149237.415648149, 6148670.175812221, 6148114.925753152, 6147531.666258751, 6151467.986910855, 6150887.880956323, 6150336.501898205, 6149777.414268707, 6149224.608764084, 6148665.671261398, 6148101.022009681, 6147544.268355791, 6151466.722746198, 6150897.904707423, 6150348.306523482, 6149774.016546309, 6149209.604329406, 6148660.251980549, 6148096.803168501, 6147543.981328865, 6151470.571596005, 6150912.8840630865, 6150350.9258112665, 6149776.580851359, 6149213.289218638, 6148672.17876769, 6148105.733273398, 6147541.432826175, 6151450.103306252, 6150902.858587509, 6150331.000661194, 6149784.875486368, 6149223.908236637, 6148665.605495494, 6148112.391972972, 6147531.183391372, 6151453.071296144, 6150908.751279882, 6150326.127300951, 6149788.779268811, 6149238.093895602, 6148668.607548866, 6148093.753716792, 6147548.638637315, 6151475.399718693, 6150898.000644194, 6150322.516696363, 6149780.138065693, 6149230.0171419885, 6148645.692447077, 6148102.4513671575, 6147533.985541626, 6151459.954106619, 6150895.454376417, 6150345.805633467, 6149783.104858021, 6149210.44284414, 6148666.390658166, 6148098.777192346, 6147529.063005657, 6151474.518560816, 6150885.82092397, 6150325.997576919, 6149785.3775323285, 6149222.749118554, 6148689.721375715, 6148104.670127739, 6147527.336977537, 6151455.875239092, 6150888.206631802, 6150307.731675434, 6149779.613654698, 6149209.371274011, 6148691.471813372, 6148109.238568879, 6147541.470683921])

aep\_best\_sol on Genetic Generation 13: 716.6359134435673

Best solution on Genetic Generation 14:

([423960.32014795026, 424016.1643015024, 424088.20094050706, 424163.7995381232, 424229.73315778794, 424292.5807968093, 424356.71471231227, 424426.084293796, 424533.0781662881, 424594.04070543055, 424670.3991415523, 424746.64537526545, 424806.5971899118, 424869.61898808816, 424953.52605204977, 425027.12357133674, 425125.834922383, 425165.67968759424, 425233.2583589158, 425301.45674662094, 425370.964237304, 425419.28117855696, 425507.3806771064, 425587.2036100623, 425670.2387292785, 425703.70445465203, 425770.14282011666, 425852.4575595969, 425903.2615691934, 425981.8455277637, 426084.1663836371, 426133.4601921779, 426202.9381059902, 426283.8074219612, 426357.31232880807, 426411.08623116306, 426485.0953148297, 426531.48865603283, 426595.15640104405, 426672.12903225655, 426772.76267063536, 426838.10955719516, 426894.45178845525, 426965.4664771254, 427025.6881827703, 427108.75696479937, 427179.2862757864, 427234.4027974196, 427332.48619011295, 427398.3326875073, 427457.7821154181, 427525.5029597653, 427605.5103362972, 427695.37395177584, 427753.42556509905, 427823.6897152883, 427926.8151669136, 427971.20493448875, 428045.43168748275, 428085.19804260327, 428181.744715983, 428237.56038054934, 428295.8659468533, 428361.97771537455, 428457.33004021284, 428540.9071876441, 428602.0186477634, 428662.27437897655, 428733.4468903893, 428791.15341464087, 428869.9498955058, 428925.4152883305, 429044.4625779978, 429105.0163999917, 429174.59922289307, 429245.24726507923, 429295.69656846224, 429362.0516048663, 429445.61288817914, 429511.5936129446], [6151461.167918798, 6150896.336717325, 6150338.108250266, 6149784.975077005, 6149233.621211531, 6148665.8732036, 6148110.568647088, 6147529.894622942, 6151470.684763914, 6150891.701100419, 6150337.945700982, 6149776.214553932, 6149228.054124956, 6148672.000395502, 6148098.509369589, 6147540.992117124, 6151471.240392219, 6150894.5301757585, 6150347.360083934, 6149779.117617891, 6149215.556053229, 6148658.79570672, 6148095.601659018, 6147542.569202324, 6151470.961905338, 6150906.322277558, 6150344.701246081, 6149775.43703288, 6149211.62216852, 6148671.171459479, 6148107.098956028, 6147543.928733037, 6151444.14056876, 6150897.480304103, 6150330.114881272, 6149779.526449309, 6149217.898389716, 6148660.388057638, 6148114.886220991, 6147537.08373918, 6151457.527806867, 6150915.621686862, 6150332.850906374, 6149784.109314004, 6149233.937965359, 6148662.710057491, 6148092.89764807, 6147543.282528445, 6151475.532203573, 6150894.443160761, 6150322.5138210505, 6149784.978184437, 6149236.2777476, 6148644.991566456, 6148101.349701011, 6147530.334094968, 6151455.433764978, 6150895.423668965, 6150343.229572056, 6149787.576518366, 6149203.844391529, 6148666.641454804, 6148105.0852112435, 6147532.346498472, 6151474.343912968, 6150885.423134227, 6150319.332362663, 6149786.969076437, 6149217.582111709, 6148685.233770426, 6148100.130838965, 6147533.517879802, 6151460.344630484, 6150882.705285923, 6150311.985187432, 6149778.471793322, 6149207.750752556, 6148687.071467681, 6148102.471092263, 6147536.244039107])

aep\_best\_sol on Genetic Generation 14: 716.6707521597526

Best solution on Genetic Generation 15:

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aep\_best\_sol on Genetic Generation 15: 716.7585929641862

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finalsolution

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aep\_ref: 715.7028905615057

aep\_max: 716.7585929641862









