SUPPLEMENTAL MATERIALS

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Fractal Analysis of the Optimal Hydraulic Gradient Surface in Water Distribution Networks

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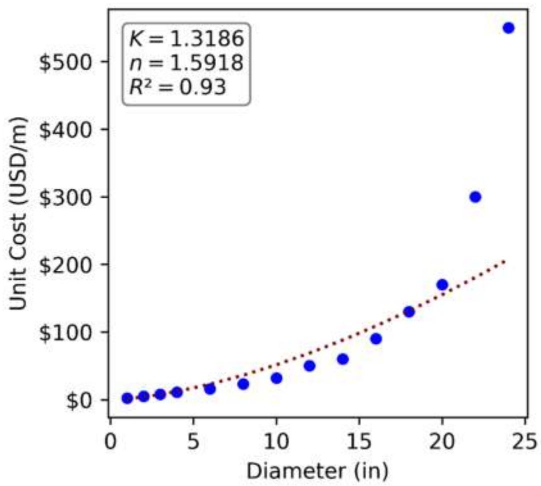

Fig. S1. Costs curve for Two Loops network

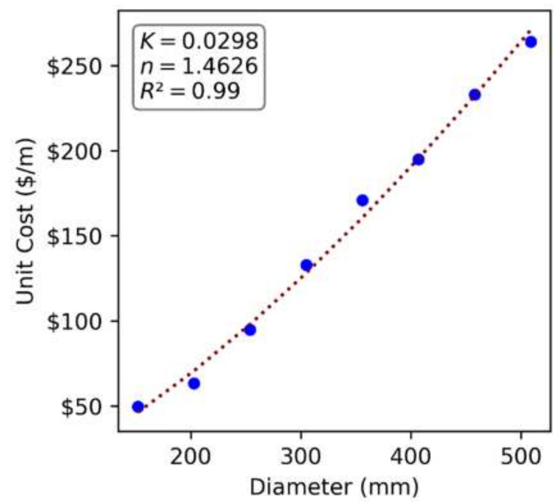

Fig. S2. Costs curve for Two Reservoirs network

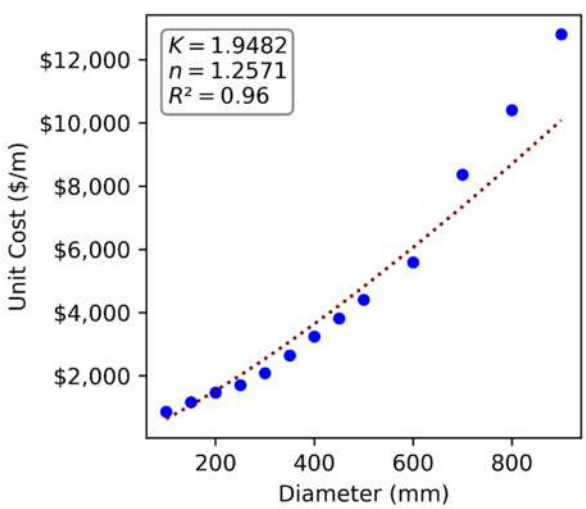

Fig. S3. Costs curve for Taichung network

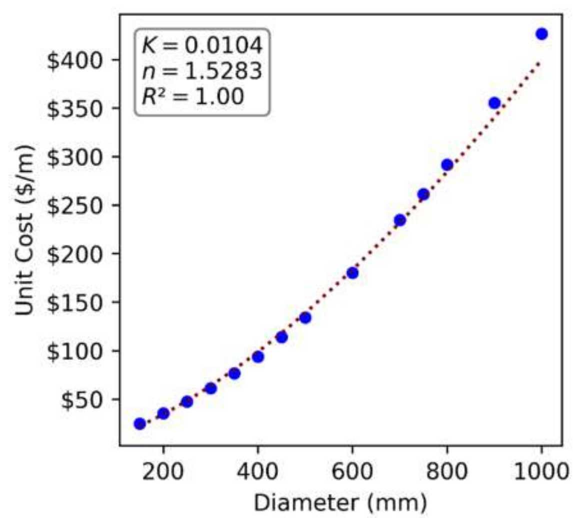

Fig. S4. Costs curve for Jilin network

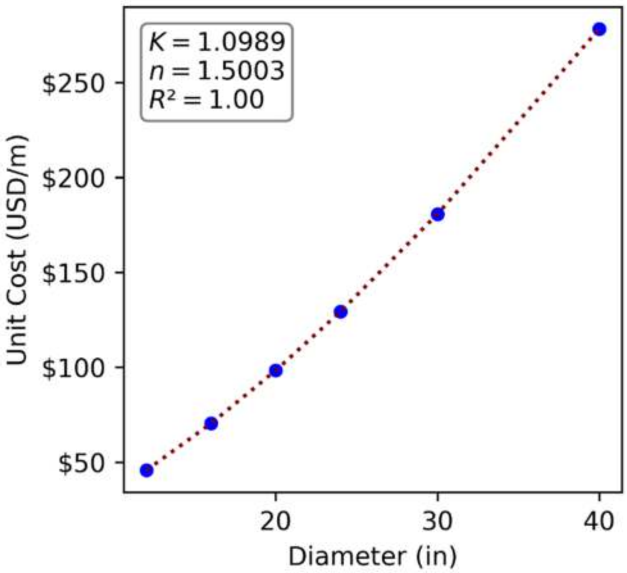

Fig. S5. Costs curve for Hanoi network

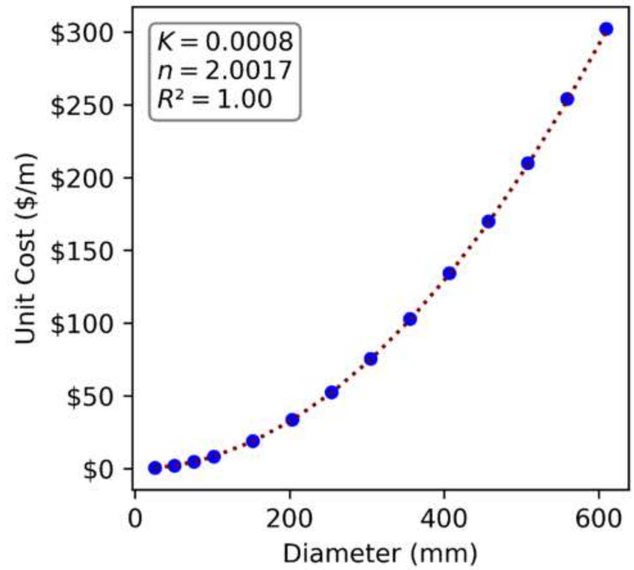

Fig. S6. Costs curve for Blacksburg network

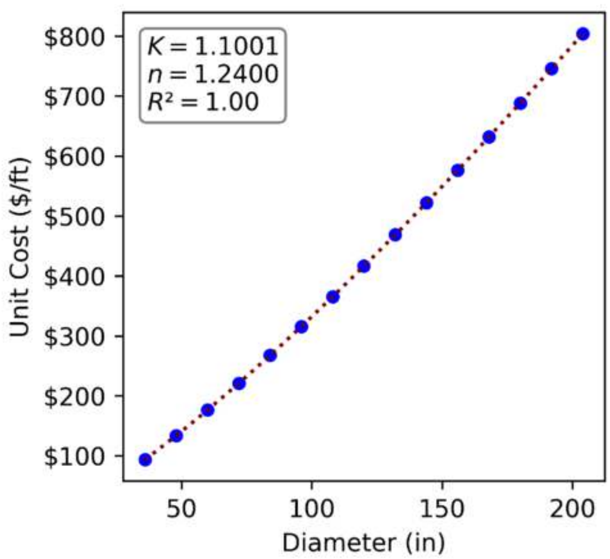

Fig. S7. Costs curve for New York Tunnels network

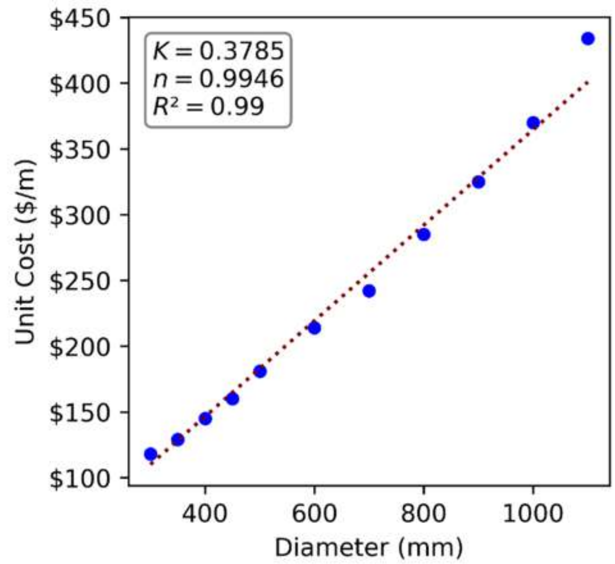

Fig. S8. Costs curve for BakRyan network

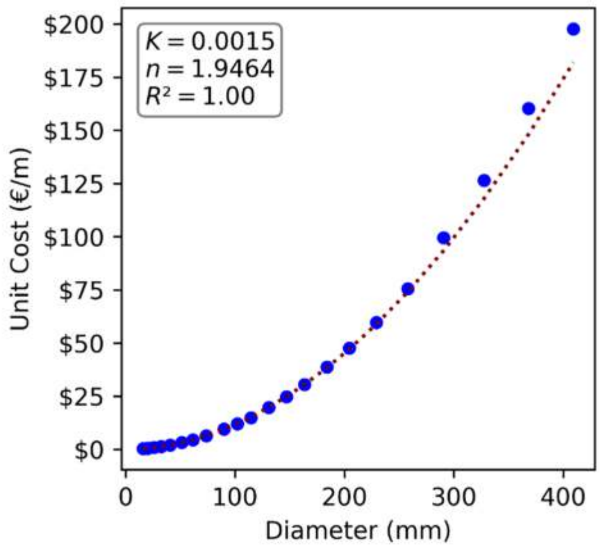

Fig. S9. Costs curve for Fossolo network

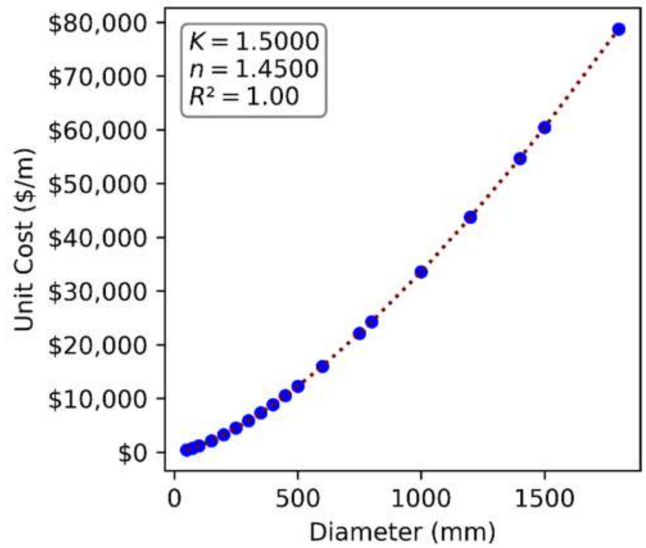

Fig. S10. Costs curve for R28 network

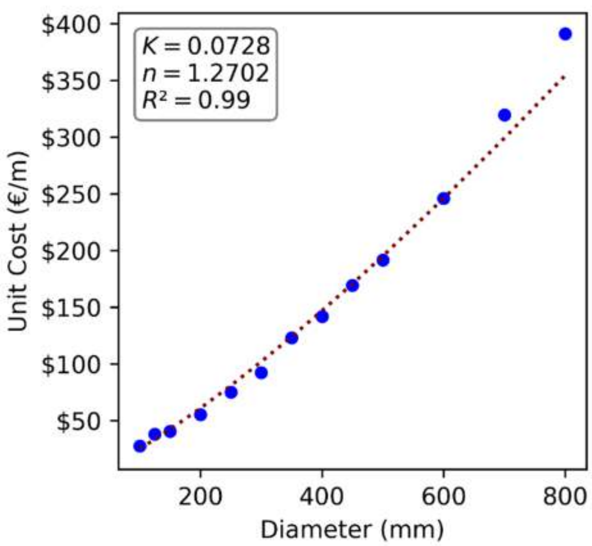

Fig. S11. Costs curve for Pescara network

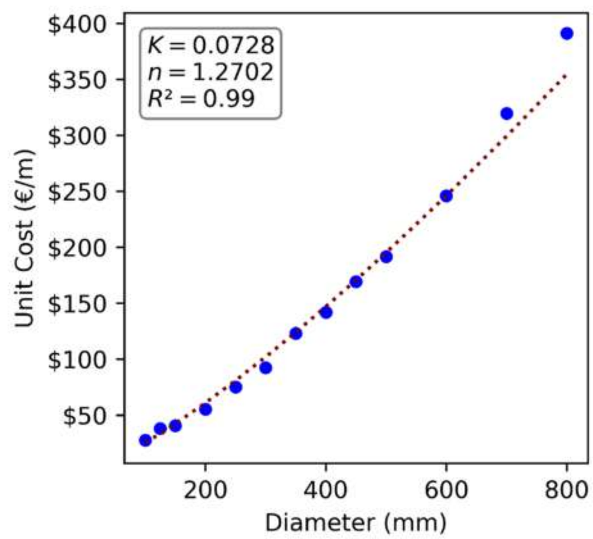

Fig. S12. Costs curve for Modena network

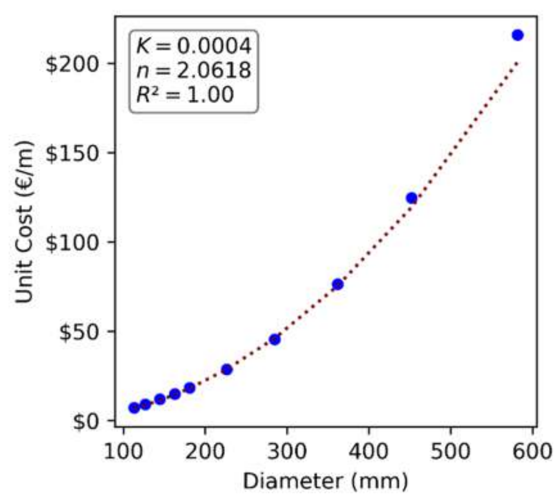

Fig. S13. Costs curve for Balerma network

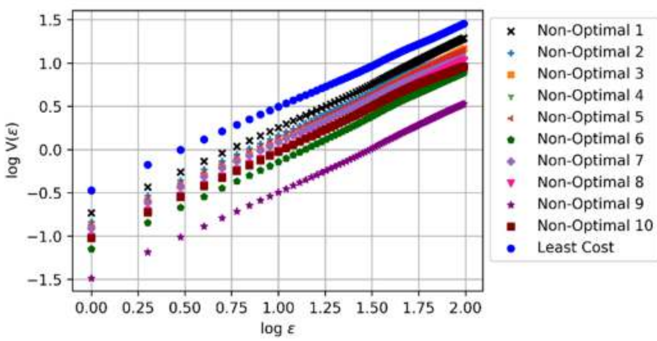

Fig. S14. Fractal analysis of the OHGS and non-optimal HGSs for Two Loops network

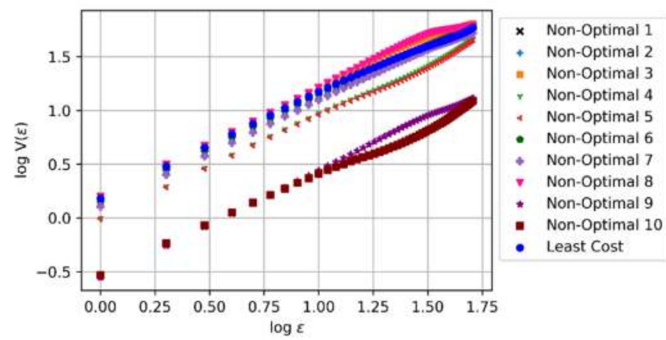

Fig. S15. Fractal analysis of the OHGS and non-optimal HGSs for Two Reservoirs network

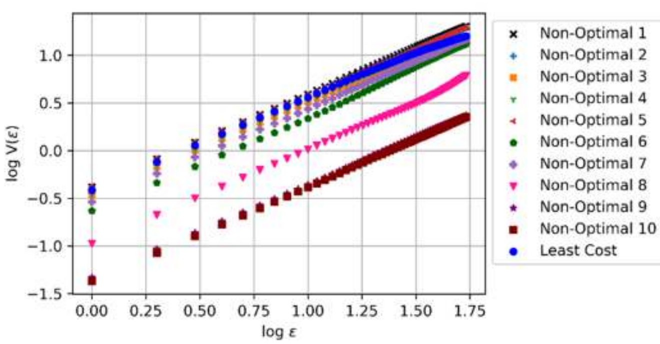

Fig. S16. Fractal analysis of the OHGS and non-optimal HGSs for Taichung network

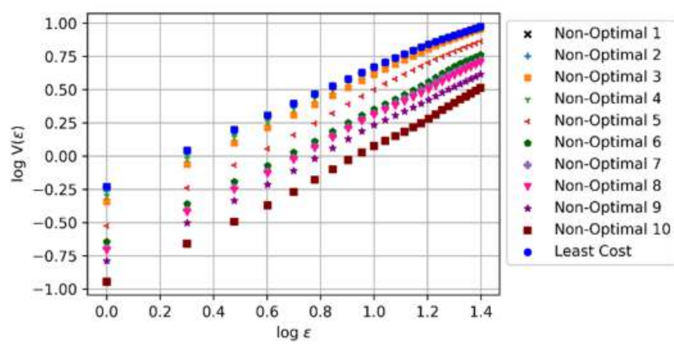

Fig. S17. Fractal analysis of the OHGS and non-optimal HGSs for Jilin network

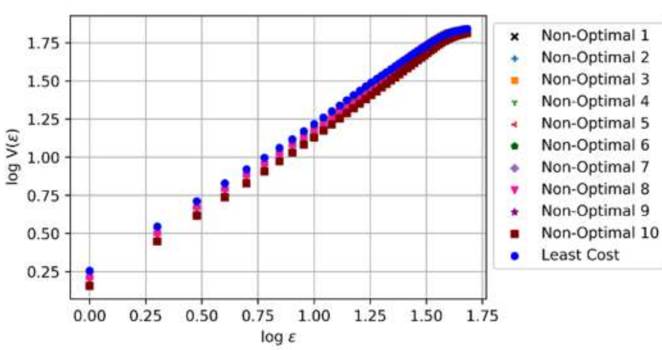

Fig. S18. Fractal analysis of the OHGS and non-optimal HGSs for Hanoi network

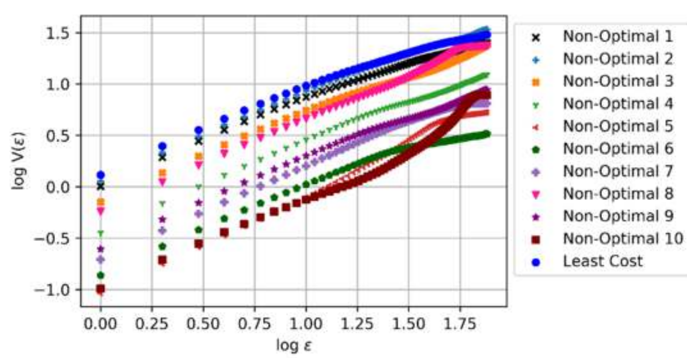

Fig. S19. Fractal analysis of the OHGS and non-optimal HGSs for Blacksburg network

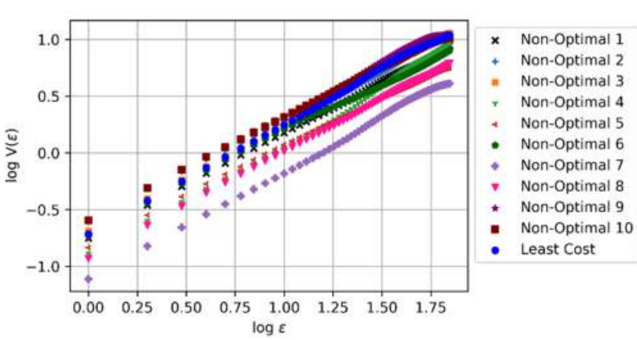

Fig. S20. Fractal analysis of the OHGS and non-optimal HGSs for New York Tunnels network

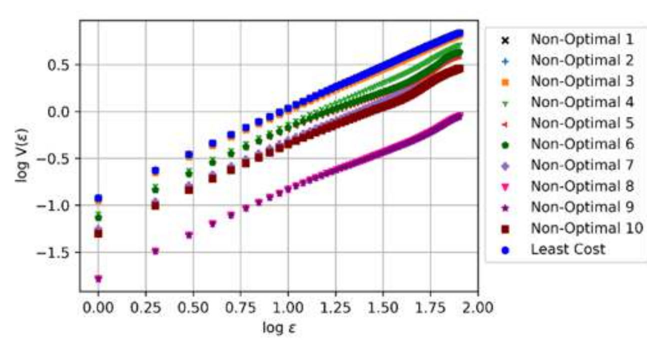

Fig. S21. Fractal analysis of the OHGS and non-optimal HGSs for BakRyan network

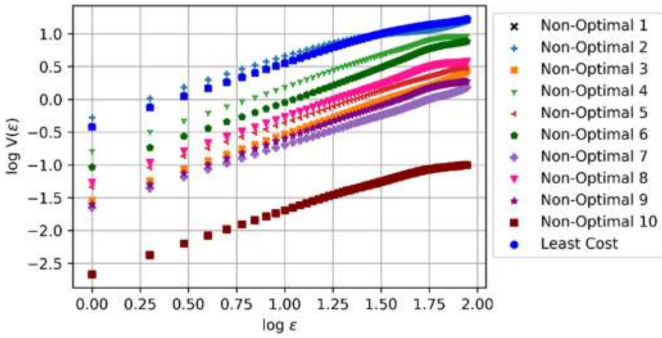

Fig. S22. Fractal analysis of the OHGS and non-optimal HGSs for Fossolo network

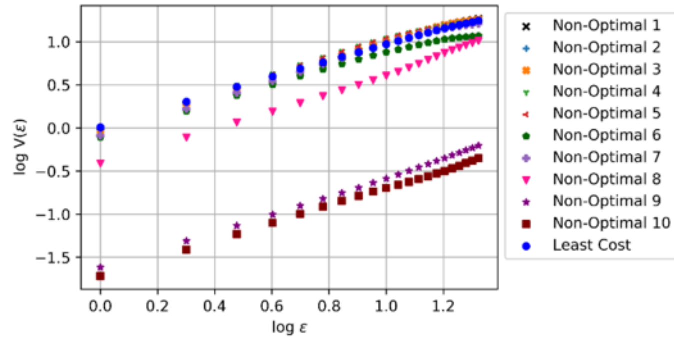

Fig. S23. Fractal analysis of the OHGS and non-optimal HGSs for R28 network

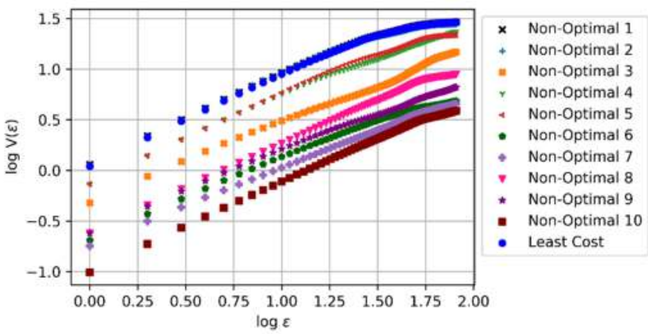

Fig. S24. Fractal analysis of the OHGS and non-optimal HGSs for Pescara network

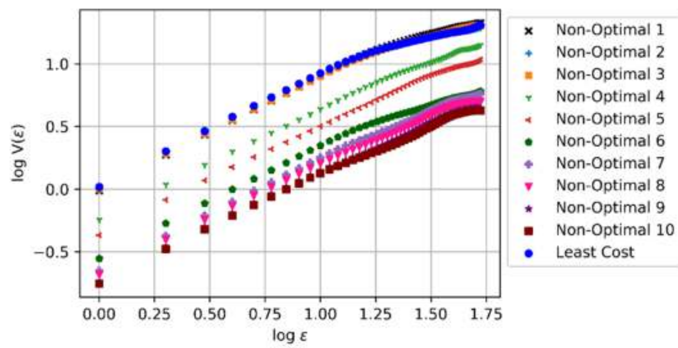

Fig. S25. Fractal analysis of the OHGS and non-optimal HGSs for Modena network

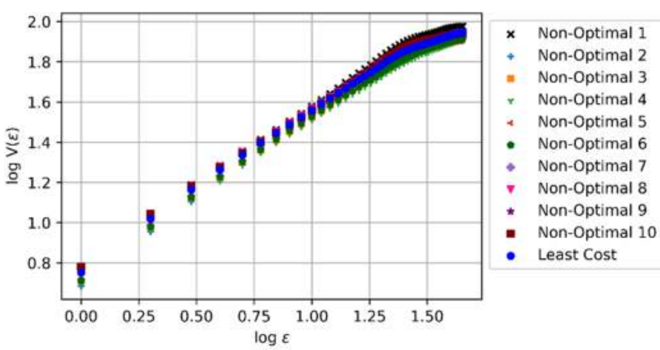

Fig. S26. Fractal analysis of the OHGS and non-optimal HGSs for Balerma network

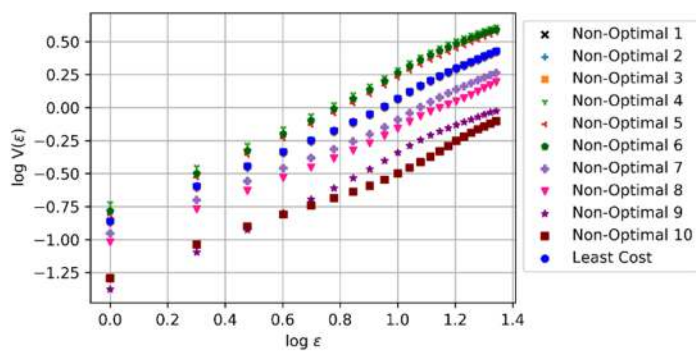

Fig. S27. Fractal analysis of the OHGS and non-optimal HGSs for La Uribe network

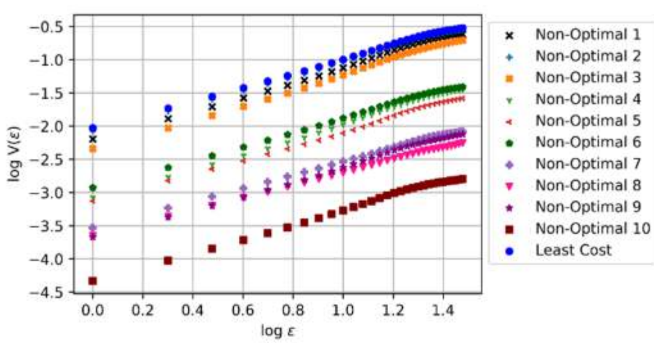

Fig. S28. Fractal analysis of the OHGS and the non-optimal HGSs for San Vicente network

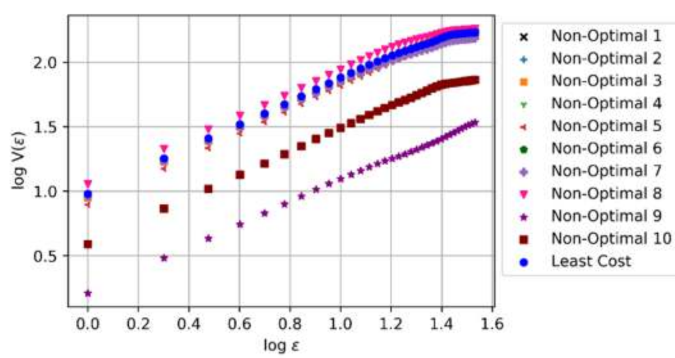

Fig. S29. Fractal analysis of the OHGS and the non-optimal HGSs for Cazucá network

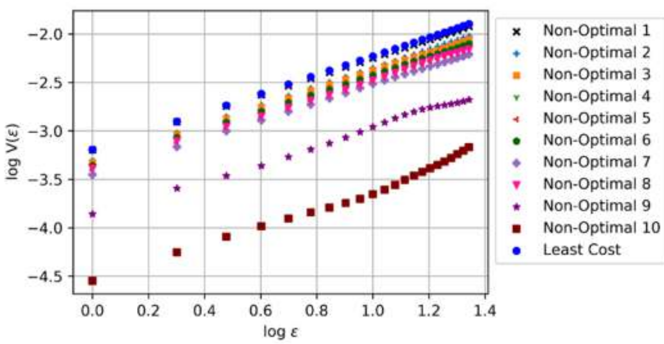

Fig. S30. Fractal analysis of the OHGS and the non-optimal HGSs for Elevada network

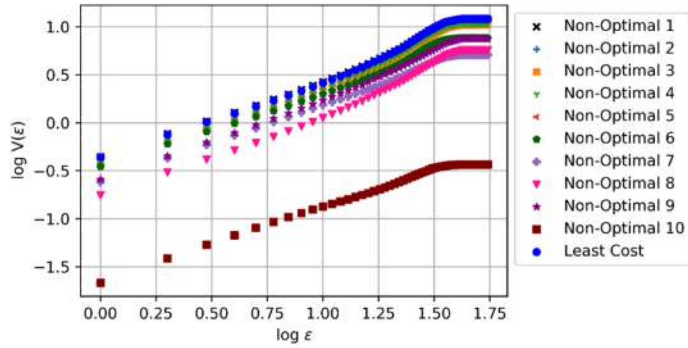

Fig. S31. Fractal analysis of the OHGS and the non-optimal HGSs for Andalucía Alta network

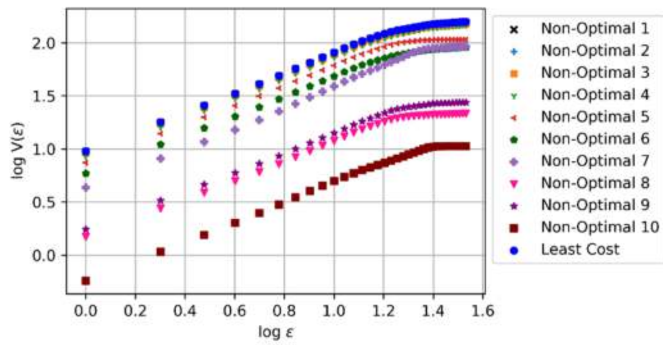

Fig. S32. Fractal analysis of the OHGS and the non-optimal HGSs for La Cumbre network

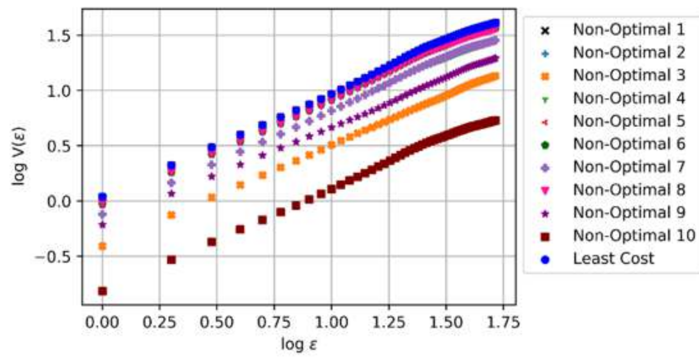

Fig. S33. Fractal analysis of the OHGS and the non-optimal HGSs for Andalucía Baja network

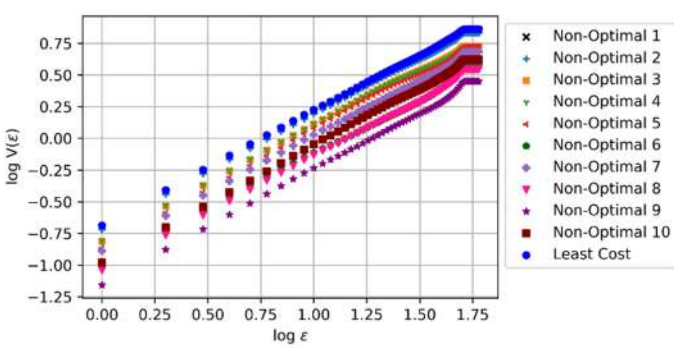

Fig. S34. Fractal analysis of the OHGS and the non-optimal HGSs for Toro network

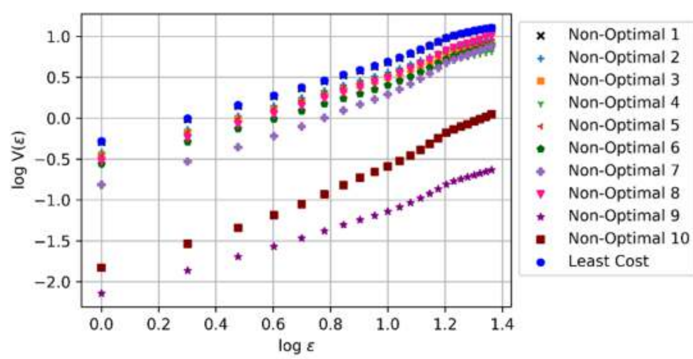

Fig. S35. Fractal analysis of the OHGS and the non-optimal HGSs for Candelaria network

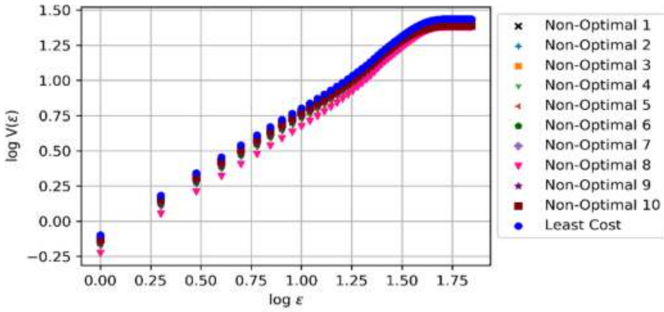

Fig. S36. Fractal analysis of the OHGS and the non-optimal HGSs for Bugalagrande network

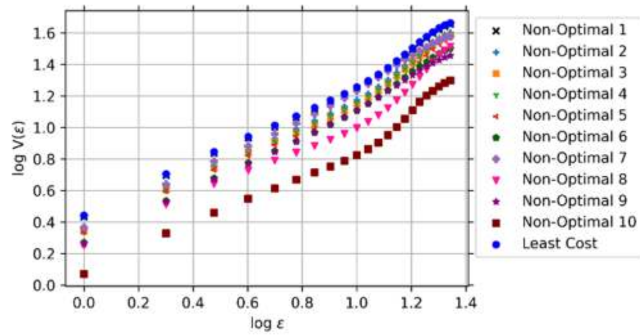

Fig. S37. Fractal analysis of the OHGS and the non-optimal HGSs for Carmen del Viboral network

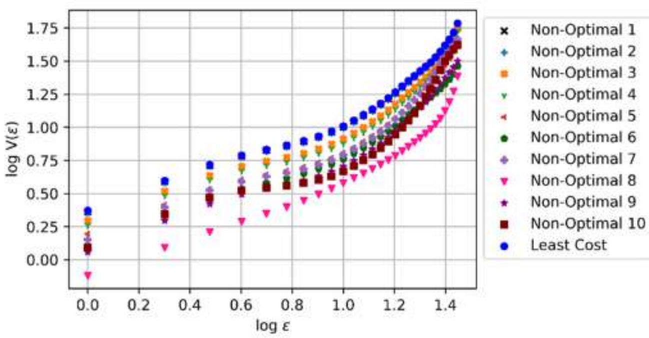

Fig. S38. Fractal analysis of the OHGS and the non-optimal HGSs for Morrorico Bajo network

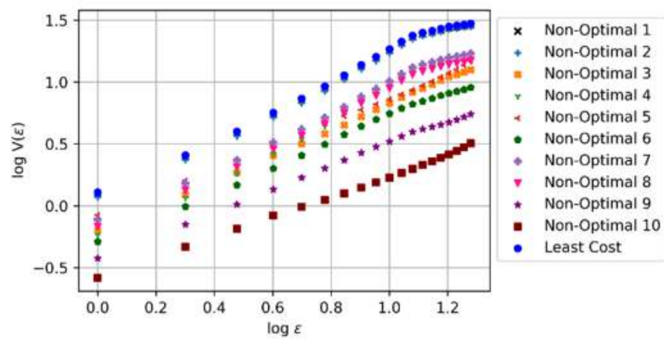

Fig. S39. Fractal analysis of the OHGS and the non-optimal HGSs for Chinú network

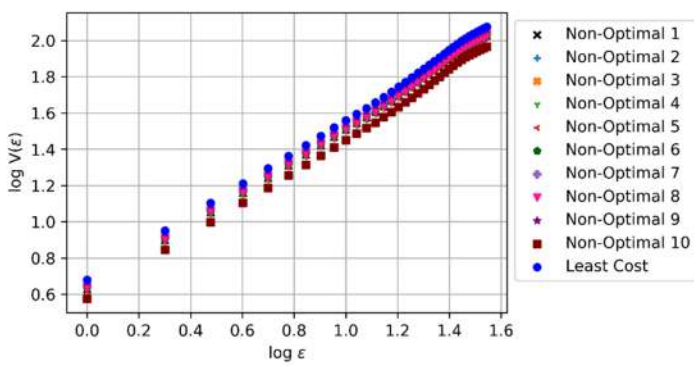

Fig. S40. Fractal analysis of the OHGS and the non-optimal HGSs for La Enea network

Table S1. Available pipe diameters and unit costs for Two Loops network

Diameter (in)	Unit cost ($/m)
1	2
2	5
3	8
4	11
6	16
8	23
10	32
12	50
14	60
16	90
18	130
20	170
22	300
24	550

Table S2. Available pipe diameters and unit costs for Two Reservoirs network

Diameter (mm)	Unit cost ($/m)
152	49.54
203	63.32
254	94.82
305	132.87
356	170.93
407	194.88
458	232.94
509	264.10

Table S3. Available pipe diameters and unit costs for Taichung network

Diameter (mm)	Unit cost ($/m)
100	860
150	1,160
200	1,470
250	1,700
300	2,080
350	2,640
400	3,240
450	3,810
500	4,400
600	5,580
700	8,360
800	10,400
900	12,800

Table S4. Available pipe diameters and unit costs for Jilin network

Diameter (mm)	Unit cost ($/m)
150	24.5
200	35.2
250	47.4
300	61.2
350	76.5
400	93.6
450	113.8
500	134.0
600	180.2
700	234.7
750	261.2
800	291.7
900	355.3
1000	426.7

Table S5. Available pipe diameters and unit costs for Hanoi network

Diameter (in)	Unit cost ($/m)
12	45.70
16	70.40
20	98.40
24	129.30
30	180.70
40	278.30

Table S6. Available pipe diameters and unit costs for Blacksburg network

Diameter (mm)	Unit cost ($/m)
25.4	0.52
50.8	2.10
76.2	4.72
101.6	8.40
152.4	18.90
203.2	33.60
254.0	52.50
304.8	75.59
355.6	102.89
406.4	134.39
457.2	170.09
508.0	209.98
558.8	254.08
609.6	302.37

Table S7. Available pipe diameters and unit costs for New York Tunnels network

Diameter (in)	Unit cost ($/ft)
36	93.59
48	133.70
60	176.32
72	221.05
84	267.61
96	315.80
108	365.46
120	416.46
132	468.71
144	522.11
156	576.59
168	632.09
180	688.54
192	745.91
204	804.14

Table S8. Available pipe diameters and unit costs for BakRyan network

Diameter (mm)	Unit cost ($/m)
300	118
350	129
400	145
450	160
500	181
600	214
700	242
800	285
900	325
1000	370
1100	434

Table S9. Available pipe diameters and unit costs for Fossolo network

Diameter (mm)	Unit cost (€/m)
16.0	0.38
20.4	0.56
26.0	0.88
32.6	1.35
40.8	2.02
51.4	3.21
61.4	4.44
73.6	6.45
90.0	9.59
102.2	11.98
114.6	14.93
130.8	19.61
147.2	24.78
163.6	30.55
184.0	38.71
204.6	47.63
229.2	59.70
257.8	75.61
290.6	99.58
327.4	126.48
368.2	160.29
409.2	197.71

Table S10. Available pipe diameters and unit costs for R28 network

Diameter (mm)	Unit cost ($/m)
50	436.11
75	785.11
100	1,191.49
150	2,144.98
200	3,255.25
250	4,498.88
300	5,860.26
350	7,328.08
400	8,893.61
450	10,549.93
500	12,291.30
600	16,010.71
750	22,127.38
800	24,298.07
1000	33,580.82
1200	43,742.55
1400	54,698.69
1500	60,453.80
1800	78,747.43

Table S11. Available pipe diameters and unit costs for Pescara network

Diameter (mm)	Unit cost (€/m)
100	27.7
125	38.0
150	40.5
200	55.4
250	75.0
300	92.4
350	123.1
400	141.9
450	169.3
500	191.5
600	246.0
700	319.6
800	391.1

Table S12. Available pipe diameters and unit costs for Modena network

Diameter (mm)	Unit cost (€/m)
100	27.7
125	38.0
150	40.5
200	55.4
250	75.0
300	92.4
350	123.1
400	141.9
450	169.3
500	191.5
600	246.0
700	319.6
800	391.1

Table S13. Available pipe diameters and unit costs for Balerma network

Diameter (mm)	Unit cost (€/m)
113.0	7.22
126.6	9.10
144.6	11.92
162.8	14.84
180.8	18.38
226.2	28.60
285.0	45.39
361.8	76.32
452.2	124.64
581.8	215.85

Table S14. Available pipe diameters and unit costs for Colombian networks

Diameter (mm)	Unit cost ($/m)
76.2	22,399
101.6	36,956
152.4	80,695
203.2	136,687
254.0	215,173
304.8	301,068
355.6	373,361
406.4	490,042
457.2	628,961
508.0	783,442
609.6	1,071,610
762.0	1,625,537
914.4	2,284,821

Table S15. Final capital costs for optimal and non-optimal designs – Part 1

ID	LC	NO1	NO2	NO3
1	$ 473 454	$ 509 028	$ 558 118	$ 657 946
2	$ 2 660 295	$ 2 760 730	$ 2 799 956	$ 2 844 058
3	$ 8 012 279	$ 8 237 353	$ 8 290 487	$ 8 722 998
4	$ 3 850 343	$ 3 859 162	$ 3 870 689	$ 4 754 272
5	$ 5 450 826	$ 5 465 789	$ 5 483 381	$ 5 499 352
6	$ 72 415	$ 100 649	$ 163 955	$ 407 386
7	$ 186 664 061	$ 245 245 457	$ 269 465 853	$ 278 550 286
8	$ 3 282 357	$ 3 285 259	$ 3 332 271	$ 3 424 860
9	$ 28 289	$ 28 314	$ 61 669	$ 98 508
10	$ 11 850 492	$ 14 404 837	$ 15 509 164	$ 16 139 028
11	$ 2 240 366	$ 2 304 558	$ 2 780 837	$ 3 780 542
12	$ 2 788 380	$ 3 086 318	$ 3 100 256	$ 5 213 384
13	$ 3 827 838	$ 3 887 845	$ 3 894 302	$ 4 097 886
14	$ 194 473 008	$ 195 061 558	$ 216 788 204	$ 233 048 999
15	$ 248 100 324	$ 248 396 475	$ 275 567 519	$ 365 431 125
16	$ 642 925 277	$ 645 112 904	$ 679 427 542	$ 929 690 069
17	$ 800 303 579	$ 818 061 977	$ 830 553 311	$ 841 682 754
18	$ 2 339 164	$ 2 773 417	$ 3 766 411	$ 4 009 546
19	$ 586 074 840	$ 595 967 859	$ 607 448 977	$ 771 759 465
20	$ 738 147 083	$ 751 628 024	$ 811 347 605	$ 860 723 755
21	$ 1 116 510 119	$ 1 142 760 927	$ 1 252 496 651	$ 1 954 879 503
22	$ 815 700 571	$ 830 890 364	$ 835 184 638	$ 1 173 393 576
23	$ 540 909 236	$ 556 148 120	$ 650 198 279	$ 712 538 057
24	$ 769 163 736	$ 844 728 547	$ 860 499 929	$ 982 141 517
25	$ 1 211 819 035	$ 1 241 732 469	$ 1 952 327 502	$ 2 177 864 692
26	$ 558 375 169	$ 572 074 445	$ 586 316 280	$ 750 223 980
27	$ 1 212 896 088	$ 1 248 840 597	$ 1 465 424 984	$ 2 340 370 413
28	$ 1 147 798 861	$ 1 171 843 364	$ 1 274 357 991	$ 1 805 123 698

Note: ID = Network Identification; LC = Least Cost; NO = Non-Optimal.

Table S16. Final capital costs for optimal and non-optimal designs - Part 2

ID	NO4	NO5	NO6	NO7
1	$ 747 265	$ 775 516	$ 795 197	$ 894 677
2	$ 2 927 387	$ 3 010 715	$ 3 094 044	$ 3 204 421
3	$ 9 309 206	$ 10 945 270	$ 11 371 988	$ 11 751 466
4	$ 5 936 031	$ 6 551 959	$ 7 257 191	$ 7 339 981
5	$ 5 592 032	$ 5 656 896	$ 5 678 925	$ 5 734 965
6	$ 585 557	$ 613 505	$ 675 388	$ 699 519
7	$ 298 510 518	$ 299 240 246	$ 302 960 049	$ 304 885 282
8	$ 4 387 418	$ 4 974 782	$ 5 820 732	$ 5 855 443
9	$ 246 090	$ 274 103	$ 304 946	$ 305 754
10	$ 17 367 221	$ 21 513 372	$ 22 964 540	$ 26 214 739
11	$ 4 509 438	$ 6 178 304	$ 6 711 434	$ 6 888 787
12	$ 7 485 296	$ 9 441 364	$ 9 697 618	$ 10 448 763
13	$ 4 126 806	$ 4 201 584	$ 4 316 870	$ 4 335 743
14	$ 270 707 192	$ 280 728 896	$ 294 810 246	$ 325 681 325
15	$ 407 768 104	$ 433 323 536	$ 503 546 181	$ 513 826 215
16	$ 1 610 959 560	$ 1 740 480 293	$ 1 949 671 685	$ 2 626 655 012
17	$ 857 417 822	$ 866 581 662	$ 1 041 969 697	$ 1 099 744 938
18	$ 4 418 666	$ 4 566 534	$ 5 030 594	$ 5 204 100
19	$ 820 193 277	$ 846 477 682	$ 1 082 167 508	$ 1 149 936 506
20	$ 960 910 845	$ 1 309 651 860	$ 1 429 142 965	$ 6 274 492 101
21	$ 2 022 322 054	$ 2 122 322 841	$ 2 234 543 479	$ 2 269 232 700
22	$ 1 360 870 614	$ 1 639 003 136	$ 1 678 996 204	$ 1 827 025 598
23	$ 799 204 730	$ 848 142 176	$ 1 079 000 460	$ 1 112 598 673
24	$ 1 044 275 843	$ 1 108 145 044	$ 1 496 477 722	$ 1 525 921 096
25	$ 3 005 792 791	$ 4 341 917 034	$ 5 069 618 210	$ 9 851 160 607
26	$ 816 948 296	$ 1 010 354 610	$ 1 141 362 090	$ 1 254 123 970
27	$ 2 598 209 385	$ 2 644 122 079	$ 2 730 773 842	$ 3 330 306 365
28	$ 1 961 178 043	$ 1 982 463 213	$ 2 042 717 385	$ 2 109 422 395

Note: ID = Network Identification; NO = Non-Optimal.

Table S17. Final capital costs for optimal and non-optimal designs - Part 3

ID	NO8	NO9	NO10
1	$ 916 046	$ 955 073	$ 972 550
2	$ 3 475 829	$ 5 282 559	$ 5 618 376
3	$ 21 706 110	$ 23 357 110	$ 24 694 676
4	$ 8 073 459	$ 9 656 401	$ 10 461 714
5	$ 5 780 952	$ 5 854 241	$ 5 892 952
6	$ 755 567	$ 761 986	$ 825 930
7	$ 307 102 053	$ 307 274 825	$ 311 957 255
8	$ 6 092 993	$ 6 123 209	$ 6 363 273
9	$ 442 787	$ 452 820	$ 626 555
10	$ 96 667 872	$ 136 118 745	$ 166 880 017
11	$ 7 302 508	$ 7 659 601	$ 10 753 716
12	$ 10 838 406	$ 11 658 015	$ 12 244 503
13	$ 4 518 129	$ 4 634 857	$ 4 721 904
14	$ 378 842 468	$ 2 292 230 122	$ 3 559 998 411
15	$ 3 077 803 770	$ 4 186 591 577	$ 4 491 099 650
16	$ 3 833 701 905	$ 3 943 889 826	$ 5 288 325 653
17	$ 1 114 821 332	$ 7 672 780 884	$ 7 930 642 955
18	$ 5 289 509	$ 48 595 179	$ 54 986 830
19	$ 1 169 658 462	$ 1 333 940 369	$ 13 917 988 694
20	$ 7 865 580 700	$ 8 119 737 327	$ 14 196 587 235
21	$ 3 813 205 709	$ 5 132 807 667	$ 25 384 024 734
22	$ 2 584 058 160	$ 3 796 220 689	$ 5 651 909 421
23	$ 1 205 906 547	$ 12 271 721 275	$ 12 512 837 676
24	$ 1 710 334 414	$ 5 092 590 304	$ 5 933 763 364
25	$ 10 299 198 324	$ 14 209 985 408	$ 17 299 065 474
26	$ 1 733 419 147	$ 2 704 427 681	$ 3 667 920 384
27	$ 7 083 966 573	$ 19 337 763 588	$ 24 950 671 357
28	$ 2 123 462 512	$ 2 141 143 745	$ 2 200 930 478

Note: ID = Network Identification; NO = Non-Optimal.

Table S18. Mean diameter values for each design

ID	Mean (mm)										
	LC	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	260.35	269.88	288.93	323.85	342.90	361.95	371.48	400.05	400.05	419.10	403.23
2	170.00	176.00	179.00	182.00	188.00	194.00	194.00	197.00	209.00	257.00	329.00
3	156.45	154.84	154.84	164.52	172.58	190.32	204.84	201.61	380.65	398.39	419.35
4	404.41	405.88	407.35	510.29	598.53	650.00	700.00	711.76	770.59	888.24	930.88
5	600.64	603.62	606.61	629.02	636.49	630.52	648.45	635.00	643.96	643.96	652.93
6	95.79	95.79	122.65	212.63	263.43	330.93	291.74	325.12	325.85	330.93	335.28
7	2111.83	2452.91	2641.60	2764.97	2997.20	3048.00	3033.49	3171.37	3077.03	3055.26	3011.71
8	376.72	378.45	385.34	393.97	503.45	544.83	658.62	652.59	671.55	700.86	701.72
9	49.13	49.23	69.56	100.00	142.24	143.73	151.02	142.51	181.49	188.33	223.42
10	91.04	102.99	108.96	113.81	115.67	127.61	142.54	150.00	357.46	495.90	561.57
11	166.67	168.43	178.79	242.93	290.91	391.67	368.43	377.78	385.10	386.62	480.81
12	139.43	140.46	141.32	219.32	285.25	365.77	367.19	392.74	411.67	431.31	448.66
13	179.03	187.63	182.11	189.74	184.52	185.84	187.53	199.79	205.38	202.38	203.74
14	76.72	79.83	89.16	93.82	104.19	97.97	116.63	99.53	118.19	356.64	395.00
15	83.78	84.16	90.61	109.18	109.18	113.73	113.73	114.87	321.10	368.87	375.31
16	80.49	83.71	111.62	373.13	429.65	402.11	368.12	374.20	402.11	459.70	387.08
17	120.40	121.92	122.77	123.44	125.31	126.32	129.71	134.28	134.96	385.74	411.82
18	76.20	84.60	95.90	104.59	107.78	109.23	110.97	110.20	111.55	366.51	378.78
19	76.27	77.19	78.74	91.16	96.59	97.37	103.43	110.07	111.76	116.28	393.84
20	79.29	80.23	84.60	90.18	95.28	114.64	117.46	226.45	226.25	228.33	378.58
21	79.87	81.04	85.42	108.50	107.34	112.56	112.56	114.11	144.34	159.94	388.61
22	77.52	78.36	78.84	91.51	105.92	111.69	112.95	112.41	125.44	149.52	143.69
23	79.83	81.08	86.14	91.39	95.55	102.90	110.87	114.10	113.34	372.85	357.12
24	78.49	82.21	83.18	88.53	90.94	93.34	112.15	113.35	116.61	186.45	191.26
25	81.26	82.56	103.59	109.02	120.75	134.98	141.97	207.29	203.31	242.35	299.46
26	76.47	77.73	78.83	88.67	92.23	105.47	113.00	116.20	120.93	163.20	175.40
27	76.22	77.44	82.80	103.51	112.03	111.54	112.59	121.33	157.20	273.85	320.22
28	78.29	79.25	81.69	93.30	98.15	99.97	103.72	105.57	106.02	106.56	109.66

Note: ID = Network Identification; LC = Least Cost; NO = Non-Optimal.

Table S19. Standard deviation of diameter values for each design

ID	Standard deviation (mm)										
	LC	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	131.46	145.56	139.08	143.52	181.65	149.81	126.59	142.23	170.52	137.79	216.57
2	43.95	44.60	44.60	47.91	50.24	51.74	51.74	56.68	56.68	96.21	106.85
3	78.25	77.84	77.84	79.78	83.51	122.08	116.44	140.53	210.03	216.60	232.62
4	225.08	223.87	222.63	222.17	240.73	211.77	233.23	192.69	175.86	108.75	75.89
5	258.57	254.39	262.01	237.95	246.10	247.96	233.99	252.69	245.94	242.09	234.68
6	66.37	71.07	106.97	159.82	167.25	191.81	184.44	175.74	187.92	173.64	185.00
7	632.92	1341.24	1440.17	1219.93	1112.12	1349.74	1280.75	1293.26	1144.05	1281.70	1248.95
8	160.65	166.78	171.68	171.70	252.85	249.33	238.07	249.46	247.82	239.42	266.55
9	33.39	33.32	86.63	0.00	107.67	93.79	123.88	112.34	137.00	131.74	147.02
10	56.53	81.13	85.69	93.37	93.42	120.38	157.94	145.90	414.81	445.81	495.84
11	102.08	95.34	117.77	163.27	186.31	204.13	193.27	184.71	203.51	208.26	250.48
12	87.48	69.02	72.61	168.21	195.21	200.28	192.06	205.22	209.67	222.16	230.80
13	118.54	115.77	118.80	119.01	123.44	125.35	127.73	125.41	129.68	127.71	129.40
14	3.63	15.55	28.46	32.05	37.12	34.78	38.42	35.48	38.29	220.94	240.52
15	22.11	22.20	29.40	38.04	38.04	38.38	38.38	38.38	195.39	207.22	231.86
16	28.47	31.95	103.53	200.58	254.61	226.62	226.94	230.41	245.25	227.11	242.70
17	71.69	72.74	73.18	72.62	72.12	71.54	91.94	93.58	93.20	210.49	224.40
18	0.00	23.91	33.43	36.91	37.61	37.83	38.03	38.85	38.07	202.08	222.85
19	1.34	4.92	7.63	29.28	33.24	33.70	36.32	37.92	38.07	38.76	235.21
20	15.94	16.47	23.75	33.29	36.69	46.04	38.24	191.18	197.71	202.73	214.28
21	18.15	18.69	25.21	38.52	37.51	38.11	38.11	39.29	126.02	149.46	231.24
22	9.80	10.70	12.70	38.57	37.21	38.06	38.12	38.10	76.14	127.52	116.51
23	18.16	18.74	25.33	30.13	32.99	36.48	37.98	38.13	40.78	218.04	209.18
24	12.55	20.27	20.61	27.23	29.56	31.44	38.07	38.09	38.42	172.05	171.50
25	18.94	21.03	38.68	40.86	59.74	93.04	109.03	189.10	180.53	209.84	221.84
26	4.11	6.84	8.68	27.32	30.81	36.99	38.10	44.71	58.54	149.52	157.22
27	0.77	5.47	20.22	36.40	38.05	38.02	38.08	64.71	143.27	226.49	230.19
28	9.75	10.62	18.39	44.99	40.45	39.54	38.58	38.95	38.84	37.67	37.96

Note: ID = Network Identification; LC = Least Cost; NO = Non-Optimal.

Table S20. Fractal dimensions of the Hydraulic Gradient Surfaces

ID	LC	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	2.0333	1.9676	1.9947	1.9410	2.0290	1.9655	1.9578	2.0022	1.9595	1.9697	1.9895
2	2.1029	2.0441	2.0282	2.0629	2.0492	2.0569	2.0569	2.0574	2.0524	2.0148	2.0974
3	2.0723	2.0224	2.0322	2.0536	2.0353	2.0376	1.9637	2.0073	1.9975	2.0093	2.0012
4	2.1343	2.1358	2.1087	2.0542	2.0756	1.9787	1.9723	1.9667	1.9727	1.9775	1.9385
5	2.0214	2.0007	2.0232	2.0056	2.0045	1.9933	1.9967	2.0027	2.0022	1.9621	1.9713
6	2.3388	2.3165	2.2692	2.2581	2.2385	2.0044	2.3380	2.2035	2.1271	2.2319	1.9296
7	2.0381	2.0942	2.0847	2.0273	1.9581	2.1622	2.1598	2.0370	2.0772	2.0828	2.1289
8	2.0894	2.0891	2.0869	2.0872	2.0680	2.1332	2.1093	2.1136	2.1294	2.1312	2.0971
9	2.2121	2.2118	2.3674	2.0036	2.0877	2.0582	1.9762	2.0721	2.0324	2.0186	2.1720
10	2.0647	1.9869	2.0112	1.9725	2.0483	2.0404	2.1061	1.9947	1.9129	1.9290	1.9816
11	2.3125	2.3207	2.3426	2.2354	2.2641	2.2650	2.3186	2.2697	2.1792	2.2856	2.1773
12	2.3204	2.2662	2.3093	2.2883	2.2155	2.2014	2.2746	2.2003	2.2053	2.1965	2.2065
13	2.2982	2.2802	2.2563	2.2763	2.2917	2.2967	2.2945	2.3016	2.3058	2.3028	2.3024
14	2.0064	2.0060	2.0042	2.0054	1.9548	1.9290	1.9289	2.0638	2.0767	1.9490	2.1055
15	2.2110	2.2108	2.2111	2.2171	2.1860	2.2061	2.1618	2.1725	2.1076	2.1586	2.2162
16	1.9386	1.8812	1.9224	1.8420	1.8463	1.9101	1.9316	1.9885	2.0426	1.9040	1.9151
17	2.1754	2.1602	2.1594	2.1570	2.1577	2.1083	2.1626	2.1992	2.2078	2.1546	2.1551
18	2.0338	2.0536	2.0409	2.0603	2.0298	2.0593	2.0669	2.0786	2.0713	2.0839	1.9979
19	2.0703	2.0798	2.0613	2.0500	2.0512	2.0700	2.1532	2.1996	2.0266	2.0816	2.2853
20	2.1971	2.2001	2.2054	2.1974	2.1835	2.2384	2.2221	2.0891	2.2326	2.2047	2.1476
21	2.0617	2.0616	2.0628	2.1000	2.0708	2.0817	2.0510	2.0639	2.0550	2.1161	2.0831
22	2.1202	2.1171	2.1203	2.1342	2.1421	2.1057	2.0958	2.1129	2.1007	2.0885	2.0892
23	1.9283	1.9233	1.9462	1.9673	1.9454	1.9327	1.8858	1.6737	1.8206	1.8411	1.5216
24	2.1394	2.1307	2.1260	2.1350	2.1147	2.1250	2.1019	2.1322	2.0711	2.1126	2.1557
25	2.0852	2.0834	2.0690	2.0699	2.0706	2.0900	2.0705	2.0797	2.0854	2.0953	2.0877
26	2.0583	2.0606	2.0584	2.0418	2.0367	2.0365	2.0843	1.9789	2.0492	2.0215	1.9782
27	1.8622	1.8621	1.8469	1.9611	1.8006	2.0430	1.9929	1.8864	1.8876	2.0795	2.1691
28	2.0834	2.0821	2.0844	2.0820	2.0800	2.0803	2.0831	2.0829	2.0833	2.0829	2.0841

Note: ID = Network Identification; LC = Least Cost; NO = Non-Optimal.

Table S21. Coefficients of determination in fractal analysis of Hydraulic Gradient Surfaces

ID	LC	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99	1.00	0.99
3	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6	0.98	0.99	0.99	0.99	0.99	0.99	0.96	0.98	1.00	0.99	0.96
7	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8	1.00	1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00	1.00	1.00
9	0.97	0.97	0.95	1.00	0.99	1.00	1.00	1.00	0.99	1.00	0.99
10	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	1.00	1.00	1.00
11	0.96	0.96	0.95	1.00	0.99	0.98	0.98	1.00	0.99	1.00	1.00
12	0.96	0.97	0.96	0.97	0.99	0.99	0.98	0.99	0.99	1.00	1.00
13	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
14	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99
15	0.97	0.97	0.97	0.96	0.98	0.97	0.98	0.98	0.98	0.97	0.96
16	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
17	0.99	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	1.00	0.99
18	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
19	0.98	0.99	0.98	0.98	0.98	0.98	0.98	0.99	0.99	0.99	0.98
20	0.97	0.97	0.97	0.97	0.98	0.96	0.97	0.99	0.96	0.97	0.99
21	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
22	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00
23	0.99	0.99	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.99	0.99
24	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.97
25	0.99	0.99	0.98	0.98	0.98	0.97	0.99	1.00	0.96	1.00	0.97
26	0.92	0.92	0.92	0.90	0.89	0.89	0.94	0.88	0.92	0.91	0.83
27	0.99	0.99	0.99	1.00	0.99	1.00	1.00	0.99	0.99	1.00	1.00
28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Note: ID = Network Identification; LC = Least Cost; NO = Non-Optimal.

Table S22. Fractal dimension of the non-optimal networks by the flow criterion

ID	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	0.9428	0.9428	0.9342	1.0977	0.9221	0.9221	0.9428	0.9342	0.9221	0.9221
2	0.9311	1.0517	0.9311	1.0517	1.0317	1.0317	0.9311	1.0317	1.0517	1.0517
3	1.0963	1.1126	1.0773	1.1126	1.0963	1.1126	1.1126	1.0963	1.0745	1.0963
4	1.1686	1.1686	1.1686	1.2088	1.1686	1.1538	1.1538	1.1686	1.1686	1.1686
5	1.0698	1.0698	1.0605	1.0605	1.0698	1.0698	1.0605	1.0605	1.0794	1.0794
6	1.4307	1.4086	1.2537	1.4185	1.4391	1.4086	1.3978	1.2537	1.4307	1.4086
7	1.0458	1.0524	1.0524	1.0524	1.0524	0.9312	1.0524	0.9368	1.0458	1.0524
8	1.0899	1.0899	1.0899	1.0899	1.0794	1.0734	1.0839	1.0839	1.3098	1.0839
9	1.2940	1.3006	1.2860	1.2760	1.2760	1.2940	1.2860	1.2796	1.2840	1.3039
10	1.2700	1.2559	1.2559	1.2944	1.2944	1.2285	1.2652	1.2917	1.1807	1.2700
11	0.9307	0.9602	0.9733	1.0346	1.0354	0.9685	0.9770	0.9936	0.9941	0.9436
12	1.1946	1.2232	1.1962	1.2085	1.2078	1.2283	1.2055	1.1916	1.1956	1.2095
13	0.5710	0.5696	0.5724	0.5717	0.5717	0.5717	0.5728	0.5727	0.5717	0.5717
14	1.1575	1.1575	1.1542	1.1575	1.1575	1.1542	1.1575	1.1575	1.1575	1.1575
15	1.2443	1.2443	1.2443	1.2443	1.2443	1.2443	1.2443	1.2443	1.2443	1.2443
16	0.6192	0.6192	0.6192	0.6192	0.6192	0.6192	0.6192	0.6192	0.6192	0.6192
17	1.2428	1.2428	1.2397	1.2428	1.1536	1.2397	1.2397	1.2431	1.2398	1.2412
18	0.9649	0.9393	0.9830	0.9594	0.9639	0.9726	0.9696	0.9734	0.9983	0.9833
19	1.3054	1.3146	1.3006	1.3001	1.3001	1.3078	1.2991	1.2881	1.3363	1.2794
20	1.1180	1.1182	1.1180	1.1141	1.1230	1.1314	1.1181	1.1430	1.1213	1.1253
21	1.1863	1.1909	1.1899	1.1880	1.2051	1.1758	1.1991	1.2674	1.2509	1.2635
22	1.0582	1.0781	1.1246	1.0462	1.0720	1.1318	1.0317	1.1276	1.1186	1.0371
23	1.2084	1.1887	1.1927	1.1717	1.1961	1.1958	1.1993	1.1793	1.1963	1.1822
24	1.2518	1.2615	1.2311	1.2382	1.2279	1.2451	1.2051	1.2222	1.2376	1.2391
25	0.4647	0.4530	0.4279	0.4153	0.4152	0.4167	0.4249	0.4171	0.4172	0.4162
26	0.4027	0.4030	0.4028	0.4027	0.4023	0.4023	0.4032	0.4033	0.4030	0.4030
27	1.4489	1.4616	1.4637	1.4941	1.4614	1.4515	1.4757	1.5086	1.5239	1.5009
28	1.0871	1.0903	1.0948	1.1059	1.1029	1.1072	1.1706	1.1795	1.1089	1.1184

Note: ID = Network Identification; NO = Non-Optimal.

Table S23. Coefficients of determination in fractal analysis of networks by the flow criterion

ID	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	0.90	0.90	0.96	0.81	0.94	0.94	0.90	0.96	0.94	0.94
2	0.96	0.95	0.96	0.95	0.95	0.95	0.96	0.95	0.95	0.95
3	0.96	0.96	0.97	0.96	0.96	0.96	0.96	0.96	0.96	0.96
4	0.96	0.96	0.96	0.94	0.96	0.96	0.96	0.96	0.96	0.96
5	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.96	0.96
6	0.95	0.95	0.94	0.94	0.94	0.95	0.95	0.94	0.95	0.95
7	0.95	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.95	0.96
8	0.97	0.97	0.97	0.97	0.97	0.96	0.96	0.96	0.96	0.96
9	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.98	0.98	0.96
10	0.96	0.97	0.97	0.95	0.95	0.97	0.96	0.98	0.97	0.96
11	0.88	0.82	0.89	0.82	0.86	0.89	0.85	0.85	0.85	0.78
12	0.98	0.99	0.98	0.97	0.97	0.96	0.97	0.97	0.98	0.97
13	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
14	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
15	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
16	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17	0.97	0.97	0.98	0.97	0.97	0.98	0.98	0.97	0.97	0.97
18	1.00	0.99	1.00	0.98	0.99	0.99	0.99	1.00	0.99	0.99
19	0.95	0.96	0.94	0.94	0.94	0.95	0.94	0.92	0.94	0.95
20	0.98	0.98	0.98	0.97	0.97	0.97	0.98	0.97	0.98	0.98
21	0.93	0.93	0.92	0.92	0.93	0.92	0.93	0.90	0.90	0.90
22	0.93	0.97	0.99	0.96	0.89	0.98	0.93	0.98	0.98	0.89
23	1.00	0.99	1.00	1.00	0.99	1.00	0.99	1.00	1.00	1.00
24	0.98	0.98	0.97	0.99	0.97	0.98	0.97	0.97	0.97	0.98
25	0.99	0.99	0.99	0.99	0.99	0.99	0.98	0.99	0.99	0.99
26	0.98	0.98	0.98	0.98	0.99	0.99	0.99	0.98	0.99	0.98
27	0.99	1.00	0.99	0.98	0.99	0.98	0.99	0.97	0.99	0.99
28	1.00	1.00	1.00	0.99	0.99	0.99	0.97	0.98	0.99	0.97

Note: ID = Network Identification; NO = Non-Optimal.

Table S24. Fractal dimension of the non-optimal networks by the energy criterion

ID	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	1.1394	1.1981	1.1981	1.1394	1.1394	1.1394	1.1981	1.1981	1.1981	1.1981
2	1.2386	1.2386	1.2386	1.2386	1.2386	1.2386	1.2386	1.2319	1.2319	1.2386
3	1.2768	1.2768	1.2768	1.2768	1.2768	1.2768	1.2768	1.2768	1.2768	1.2768
4	1.3755	1.3755	1.3853	1.3944	1.3755	1.3755	1.3755	1.3755	1.3755	1.3755
5	1.2042	1.2107	1.2042	1.2042	1.2042	1.2042	1.1998	1.1998	1.2107	1.2107
6	1.4158	1.4158	1.4158	1.4158	1.4158	1.4158	1.4158	1.4158	1.4059	1.4158
7	1.0469	1.0469	1.0617	1.0469	1.0535	1.0389	1.0683	1.0469	1.0617	1.0683
8	1.3018	1.3018	1.3018	1.3018	1.3018	1.3018	1.3018	1.3018	1.3018	1.3018
9	1.4495	1.4435	1.4396	1.4396	1.4396	1.4396	1.4396	1.4396	1.4396	1.4396
10	1.3114	1.3169	1.3250	1.3114	1.3114	1.3275	1.3549	1.3289	1.3468	1.3340
11	0.6074	0.6074	0.6045	0.6089	0.5961	0.6002	0.6014	0.6012	0.5956	0.5979
12	1.2588	1.2596	1.2588	1.2322	1.2362	1.2482	1.2370	1.2362	1.2378	1.2378
13	0.5816	0.5877	0.5823	0.5877	0.5877	0.5864	0.5820	0.5819	0.5819	0.5819
14	1.1274	1.1071	1.1071	1.1071	1.1274	1.1071	1.1274	1.1071	1.1274	1.1274
15	1.2163	1.2163	1.2163	1.2256	1.2163	1.2163	1.2210	1.2256	1.2256	1.2210
16	0.1120	0.1120	0.1086	0.1120	0.1086	0.1120	0.1141	0.1120	0.1120	0.1141
17	1.1673	1.1673	1.1673	1.1673	1.1673	1.1652	1.1673	1.1652	1.1694	1.1742
18	1.0102	1.0117	1.0111	1.0129	1.0192	1.0392	1.0219	1.0111	1.0016	1.0373
19	1.2747	1.2747	1.2747	1.2747	1.2747	1.2747	1.2747	1.2554	1.2747	1.2747
20	1.1541	1.1541	1.1541	1.1541	1.1658	1.1658	1.1519	1.1660	1.1912	1.1658
21	1.1830	1.1830	1.1809	1.1830	1.1831	1.1830	1.1872	1.1830	1.1811	1.1830
22	1.2307	1.2351	1.2353	1.2250	1.2239	1.2297	1.2353	1.2307	1.2254	1.2309
23	1.2441	1.2441	1.2441	1.2455	1.2441	1.2441	1.2441	1.2441	1.2441	1.2410
24	1.3435	1.3435	1.3435	1.3435	1.3435	1.3435	1.3435	1.3435	1.3475	1.3435
25	0.4190	0.4186	0.4186	0.4186	0.4188	0.4192	0.4188	0.4188	0.4184	0.4188
26	0.2041	0.2041	0.2041	0.2041	0.2041	0.2042	0.2042	0.2042	0.2041	0.2041
27	1.4882	1.4882	1.4522	1.4522	1.4648	1.4522	1.4522	1.4522	1.4522	1.4522
28	1.1352	1.1321	1.1321	1.1321	1.1352	1.1321	1.1321	1.1321	1.1321	1.1352

Note: ID = Network Identification; NO = Non-Optimal.

Table S25. Coefficients of determination in fractal analysis of networks by the energy criterion

ID	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	0.92	1.00	1.00	0.92	0.92	0.92	1.00	1.00	1.00	1.00
2	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.98	0.98	0.95
3	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
4	0.96	0.96	0.95	0.94	0.96	0.96	0.96	0.96	0.96	0.96
5	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
6	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
7	0.94	0.94	0.94	0.94	0.93	0.95	0.93	0.94	0.94	0.93
8	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
9	0.97	0.98	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
10	0.96	0.95	0.96	0.96	0.96	0.95	0.95	0.96	0.97	0.97
11	0.96	0.96	0.96	0.96	0.95	0.96	0.96	0.95	0.95	0.96
12	0.99	0.98	0.99	0.98	0.99	0.99	0.99	0.99	0.99	0.99
13	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
14	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
15	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
16	0.98	0.98	0.97	0.98	0.97	0.98	0.99	0.98	0.98	0.99
17	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.96
18	0.99	0.99	0.99	0.99	0.99	0.98	0.99	0.99	0.99	0.99
19	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
20	0.99	0.99	0.99	0.99	0.98	0.98	0.99	0.98	0.98	0.98
21	0.99	0.99	0.98	0.99	0.98	0.99	0.99	0.99	0.98	0.99
22	0.98	0.98	0.98	0.97	0.97	0.97	0.98	0.98	0.97	0.97
23	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
24	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	1.00	0.99
25	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
26	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
27	1.00	1.00	0.99	0.99	1.00	0.99	0.99	0.99	0.99	0.99
28	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

Note: ID = Network Identification; NO = Non-Optimal.

Table S26. Fractal dimension of the non-optimal network by the infrastructural criterion

ID	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	1.0977	1.0977	0.9221	1.0977	1.0977	1.0977	1.1394	1.1394	1.1981	0.9221
2	1.0317	0.9382	0.9382	0.9382	0.9382	0.9382	0.9382	1.0317	0.9382	0.9635
3	1.2768	1.2996	1.2996	1.1996	1.2224	1.2224	1.2907	1.2768	1.1368	1.2224
4	1.2517	1.2517	1.2890	1.2890	1.2890	1.3815	1.3815	1.3905	1.3944	1.3944
5	1.2142	1.2142	1.2173	1.2173	1.2274	1.2173	1.2274	1.2274	1.2274	1.2173
6	1.3346	1.4391	1.4135	1.4185	1.3978	1.4158	1.2327	1.4158	1.3401	1.4216
7	1.0376	1.0617	1.0444	1.0444	1.0535	1.0442	1.0469	1.0444	1.0296	1.0524
8	1.3073	1.3073	1.3048	1.3073	1.2893	1.3048	1.1934	1.2893	1.3000	1.2438
9	1.4495	1.3508	1.4670	1.4495	1.4586	1.4586	1.4495	1.4495	1.3841	1.3841
10	1.3114	1.3169	1.3250	1.3114	1.3114	1.3275	1.3549	1.3289	1.3468	1.3340
11	0.8540	0.9676	0.9432	0.9949	0.9780	0.9224	0.9390	0.9777	0.9267	0.9807
12	1.2653	1.2168	1.2335	1.2466	1.2424	1.2271	1.2473	1.2553	1.2634	1.2546
13	0.5806	0.5816	0.5796	0.5787	0.5787	0.5787	0.5799	0.5796	0.5744	0.5744
14	1.1244	1.0938	1.0842	1.1077	1.0900	1.1089	1.1150	1.1284	1.1285	1.1234
15	1.1961	1.1855	1.1998	1.2101	1.1835	1.1965	1.2018	1.2636	1.1904	1.2094
16	0.5293	0.4280	0.6558	0.5982	0.5098	0.6534	0.6192	0.6537	0.6534	0.4855
17	1.1407	1.1427	1.1426	1.1567	1.1552	1.1083	1.1037	1.0961	1.2030	1.1972
18	1.0280	0.9856	0.9743	0.9907	0.9808	0.9822	0.9994	0.9805	1.0133	0.9833
19	1.2337	1.2335	1.3118	1.3286	1.3276	1.2287	1.3177	1.2374	1.2620	1.2694
20	1.1456	1.1307	1.1477	1.1403	1.1623	1.1573	1.0615	1.1432	1.1453	1.1124
21	1.1345	1.1796	1.1608	1.1612	1.1574	1.1479	1.1518	1.1852	1.1642	1.1880
22	1.1751	1.1644	1.1760	1.2238	1.2573	1.2112	1.2318	1.1752	1.2270	1.1517
23	1.2167	1.2092	1.2065	1.2224	1.2095	1.2174	1.2278	1.2084	1.2131	1.1898
24	1.3376	1.2896	1.2907	1.3141	1.3347	1.2966	1.3295	1.2851	1.2736	1.2403
25	0.4176	0.4168	0.4163	0.4151	0.4167	0.4175	0.4157	0.4191	0.4125	0.4152
26	0.2042	0.2041	0.2040	0.2040	0.2042	0.2040	0.2043	0.2038	0.2036	0.2036
27	1.4547	1.4533	1.4533	1.4549	1.4426	1.4426	1.4337	1.4398	1.4459	1.4588
28	1.1115	1.1178	1.1065	1.1182	1.1094	1.1012	1.1068	1.0936	1.1162	1.1043

Note: ID = Network Identification; NO = Non-Optimal.

Table S27. Coefficients of determination in fractal analysis of networks by the infrastructural criterion

ID	NO1	NO2	NO3	NO4	NO5	NO6	NO7	NO8	NO9	NO10
1	0.81	0.81	0.94	0.81	0.81	0.81	0.92	0.92	1.00	0.94
2	0.95	0.94	0.94	0.94	0.94	0.94	0.94	0.95	0.94	0.94
3	0.96	0.98	0.98	0.92	0.93	0.93	0.95	0.96	0.96	0.93
4	0.95	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94
5	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
6	0.95	0.94	0.91	0.94	0.95	0.93	0.95	0.93	0.93	0.95
7	0.96	0.94	0.96	0.96	0.93	0.95	0.94	0.96	0.97	0.96
8	0.96	0.96	0.97	0.96	0.96	0.97	0.98	0.96	0.96	0.98
9	0.97	0.98	0.96	0.97	0.96	0.96	0.97	0.97	0.97	0.97
10	0.96	0.95	0.96	0.96	0.96	0.95	0.95	0.96	0.97	0.97
11	0.80	0.85	0.89	0.86	0.84	0.88	0.81	0.85	0.78	0.85
12	0.97	0.99	0.99	0.98	0.97	0.98	0.98	0.97	0.98	0.98
13	1.00	0.99	0.99	0.99	1.00	1.00	0.99	0.99	0.99	0.99
14	0.94	0.93	0.91	0.95	0.93	0.94	0.95	0.96	0.91	0.96
15	0.94	0.95	0.94	0.95	0.94	0.94	0.92	0.96	0.93	0.96
16	0.27	0.21	0.30	0.36	0.26	0.29	0.36	0.30	0.65	0.23
17	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.96	0.95
18	0.98	0.99	1.00	0.99	0.99	0.99	0.99	0.99	0.98	0.99
19	0.96	0.96	0.92	0.92	0.92	0.95	0.93	0.98	0.97	0.93
20	0.98	0.98	0.98	0.98	0.97	0.98	0.99	0.98	0.98	0.98
21	0.97	0.97	0.97	0.97	0.97	0.98	0.97	0.93	0.98	0.94
22	0.97	0.98	0.98	0.95	0.95	0.96	0.96	0.97	0.97	0.98
23	1.00	0.99	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
24	1.00	0.96	0.98	0.98	0.99	0.99	0.97	0.98	0.97	0.97
25	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
26	0.98	0.99	0.98	0.98	0.98	0.99	0.98	0.99	0.98	0.98
27	0.98	0.99	0.99	0.99	0.99	0.99	0.99	0.97	0.99	0.99
28	1.00	0.99	1.00	0.99	1.00	0.99	1.00	1.00	1.00	0.99

Note: ID = Network Identification; NO = Non-Optimal.