

Summary

October 7, 2024

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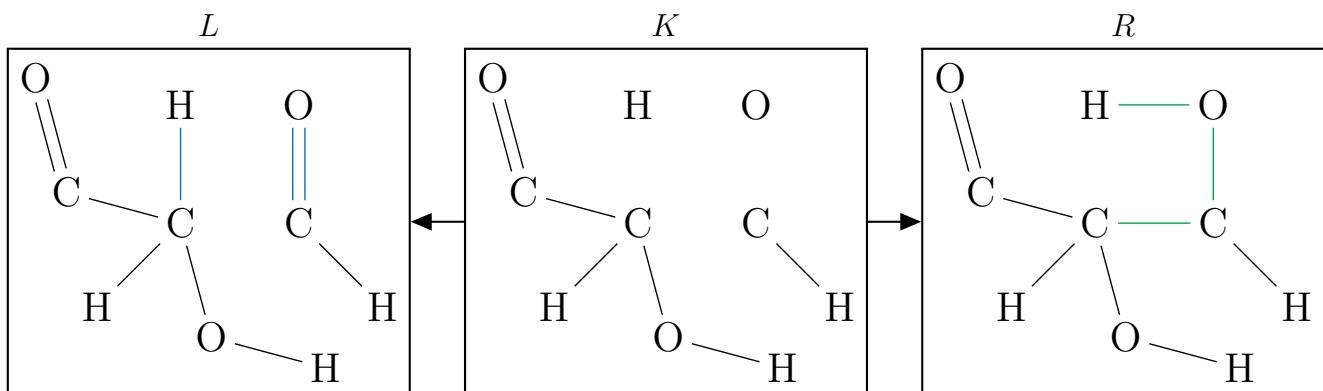
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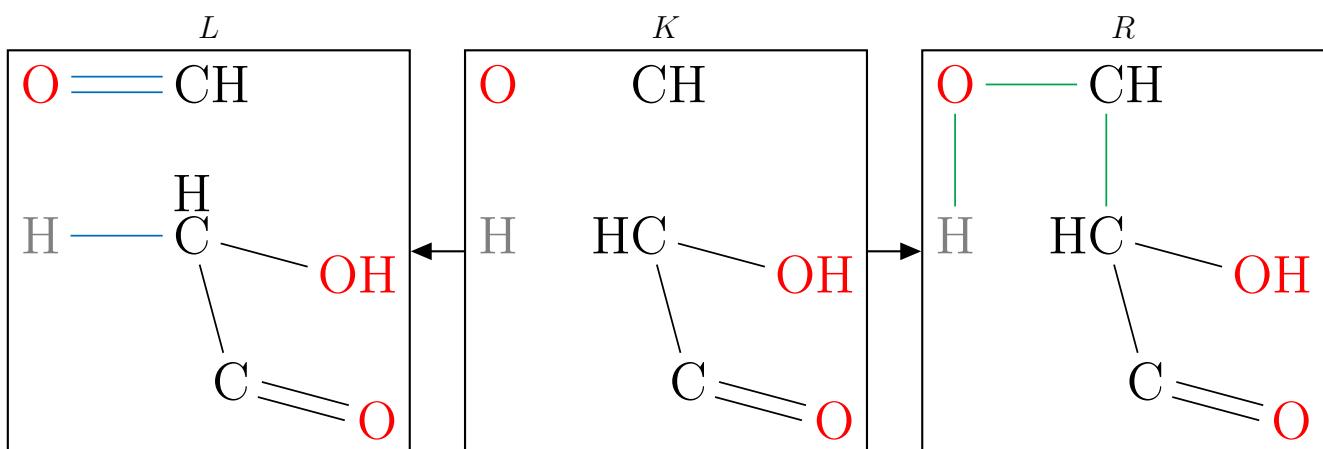
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0.1 Loaded Rules

0.1.1 AL

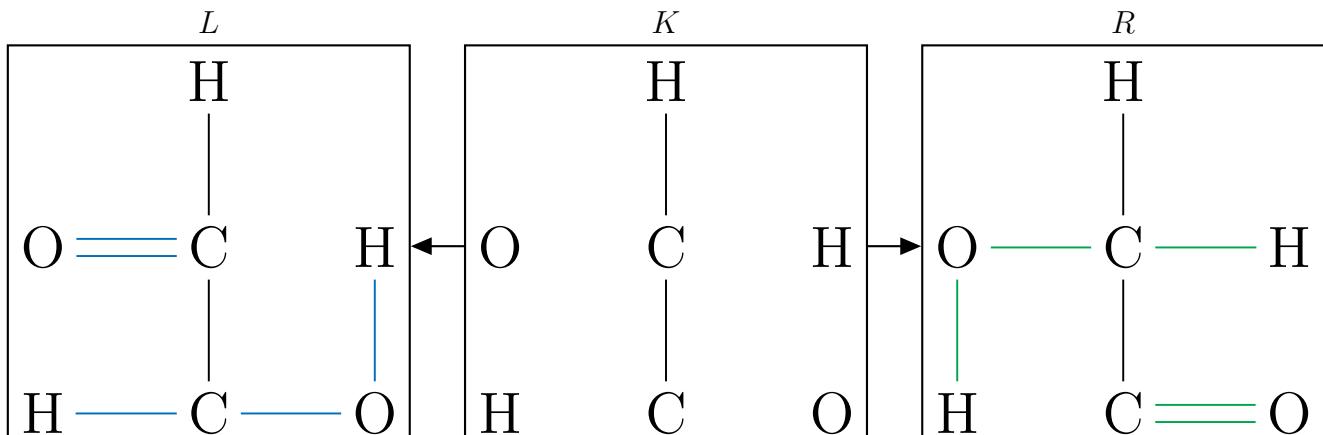


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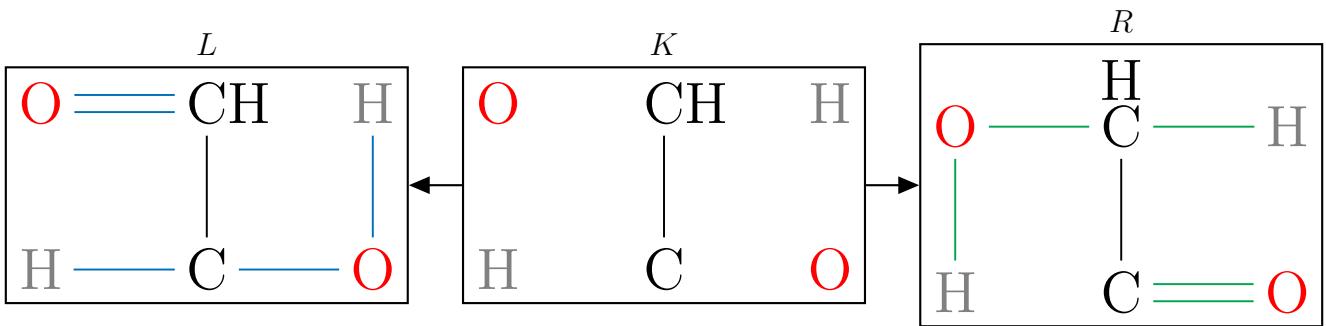


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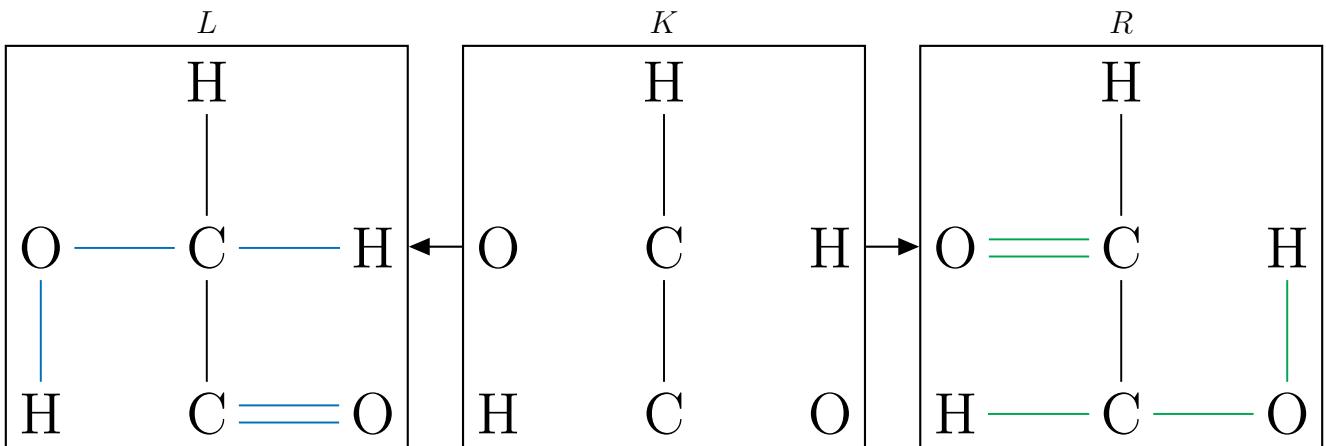
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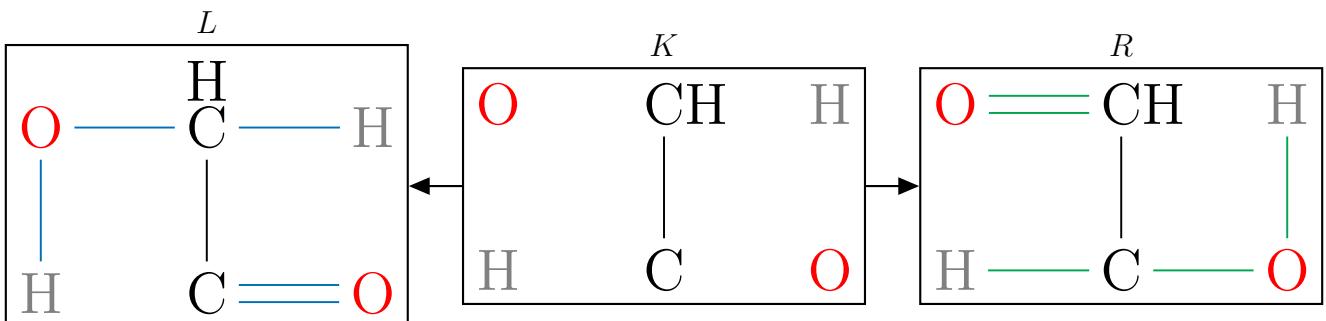
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0.1.3 KeAl



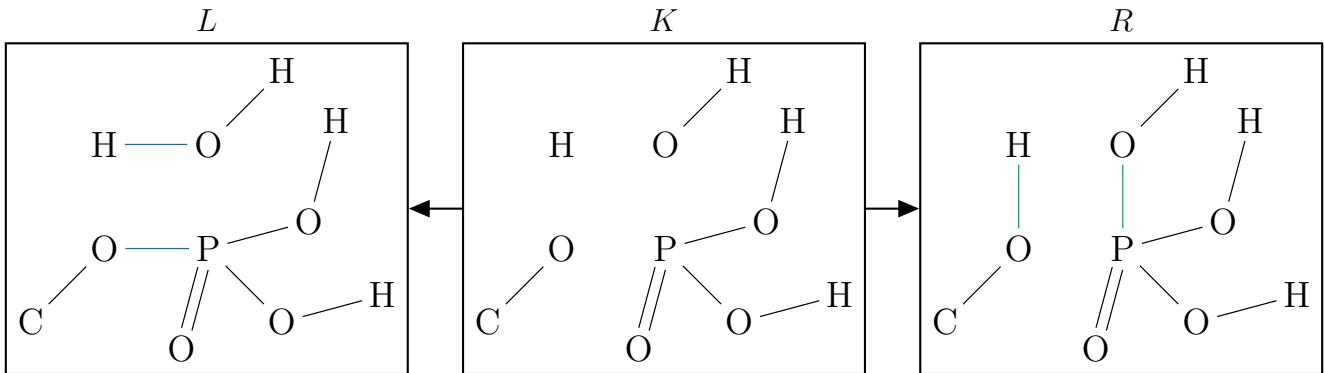
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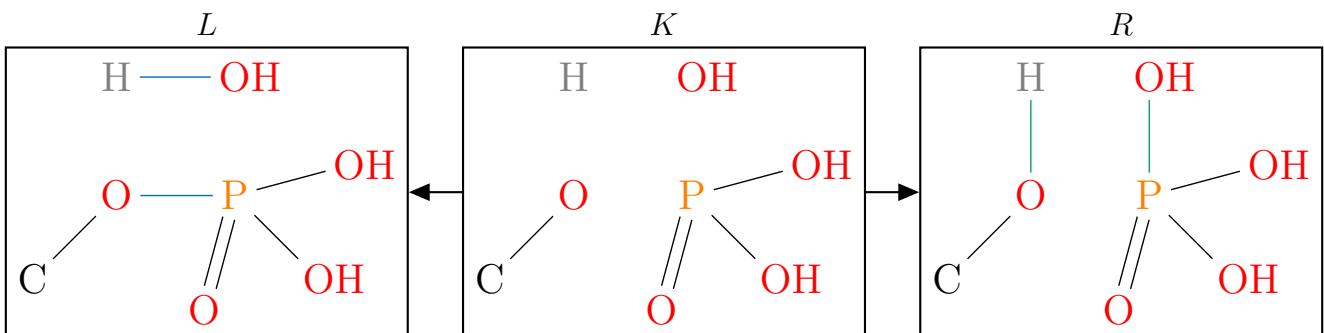
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0.1.4 PHL

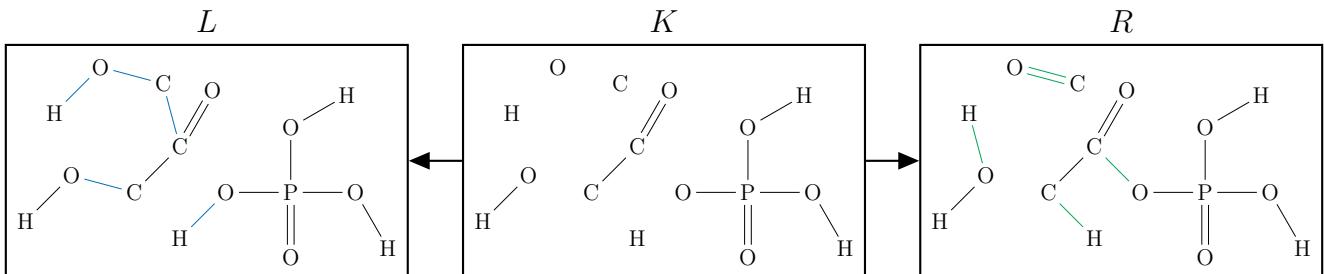


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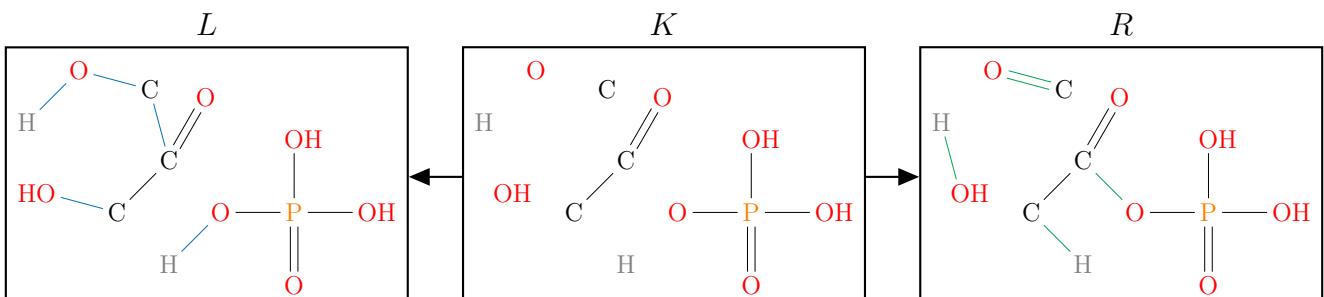


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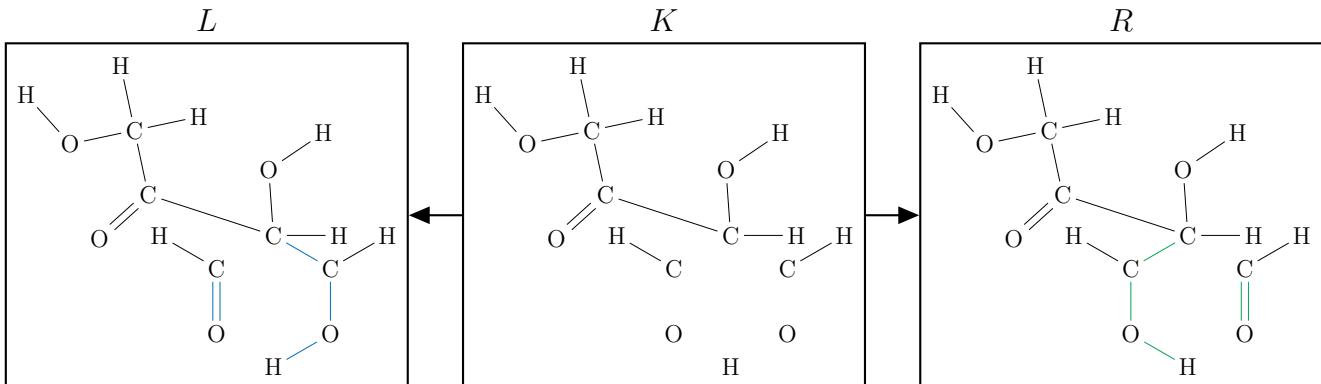


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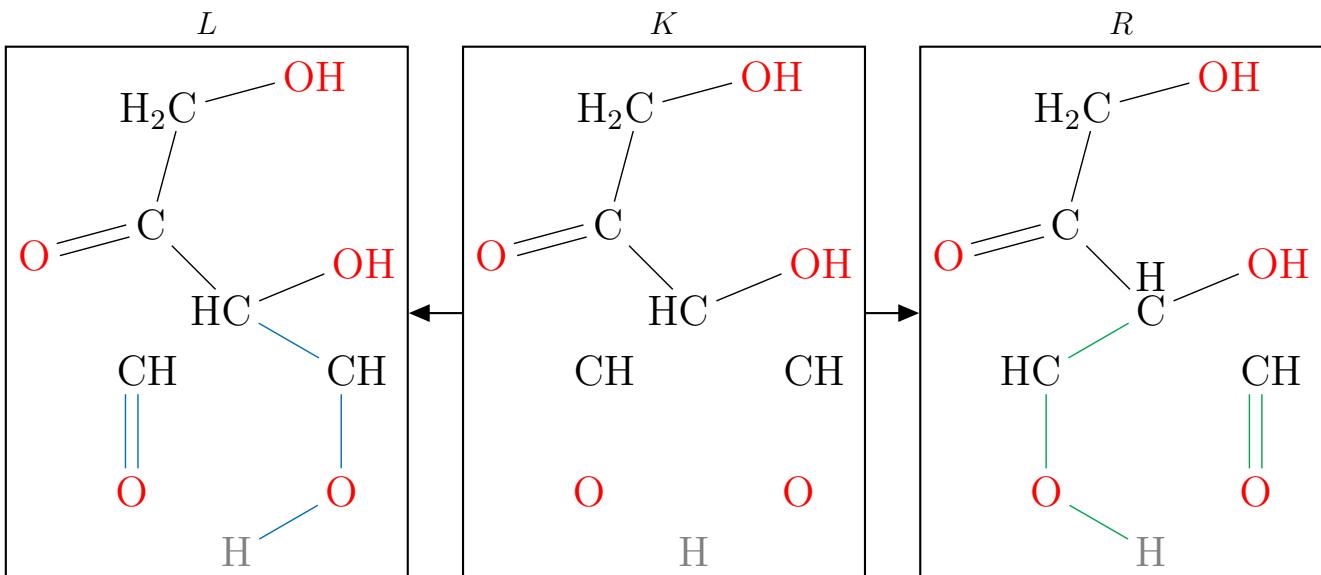


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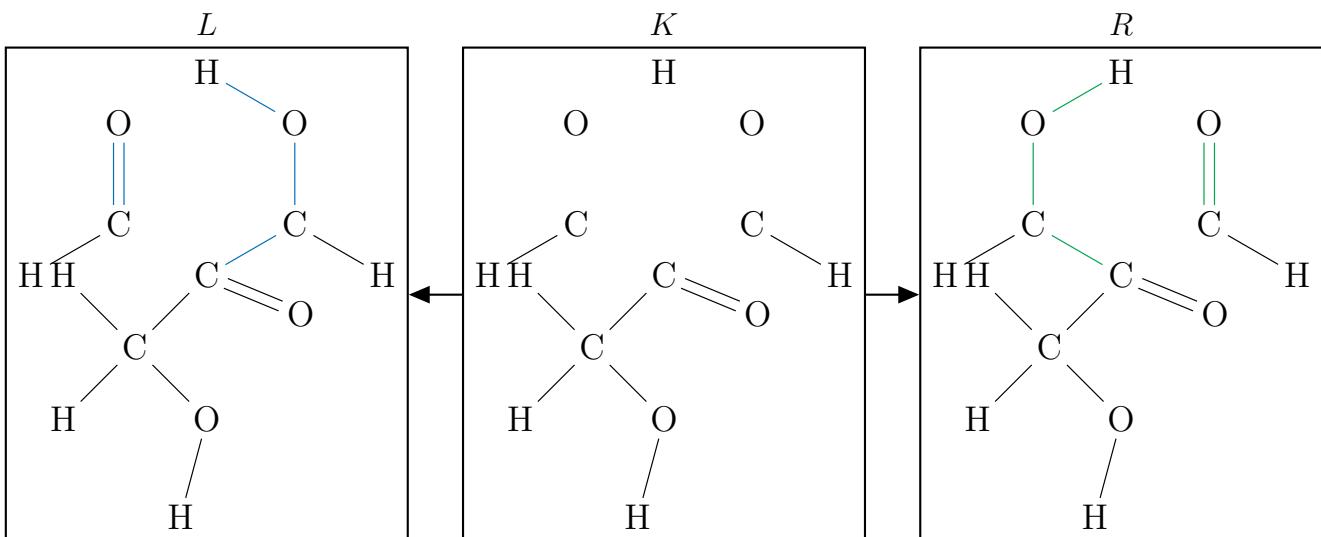


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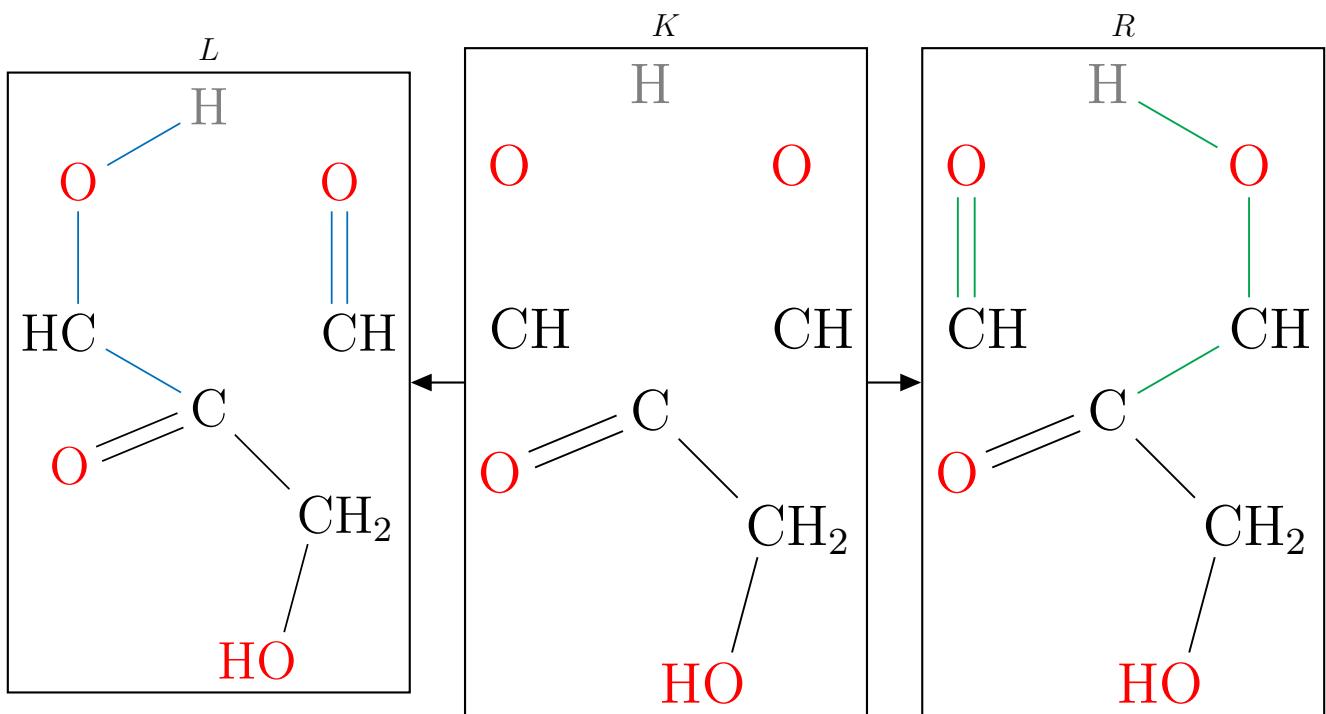


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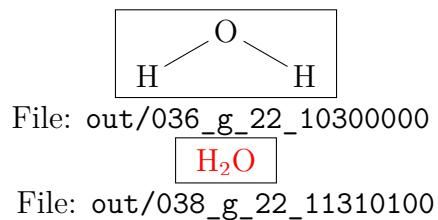


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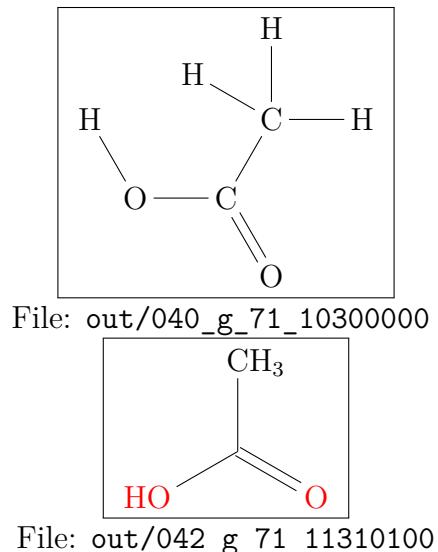
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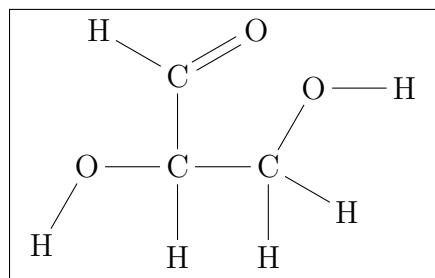
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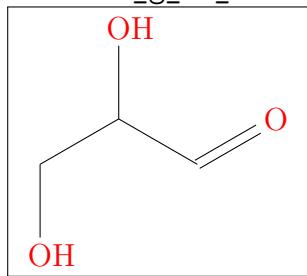
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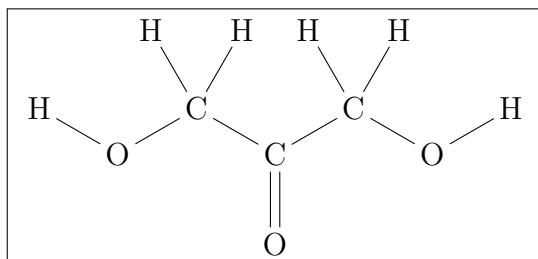


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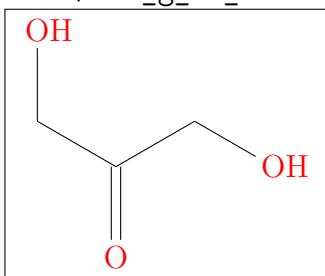


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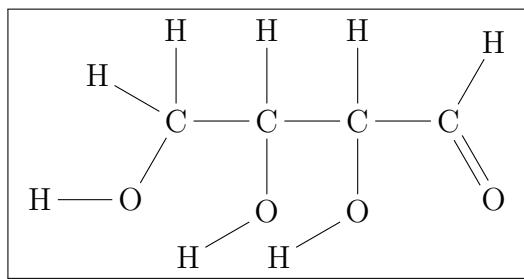


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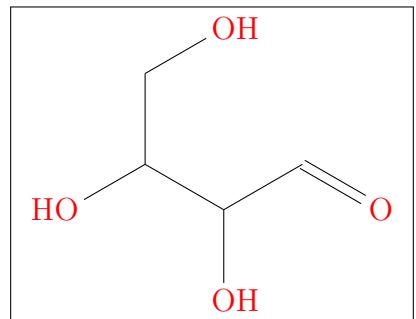


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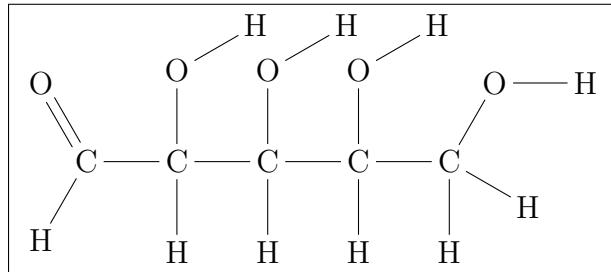


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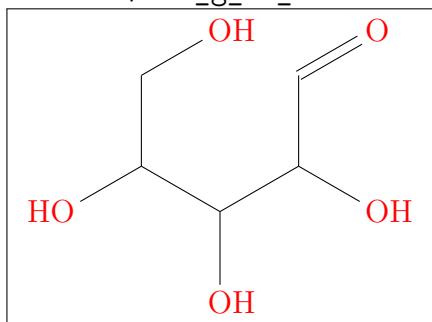


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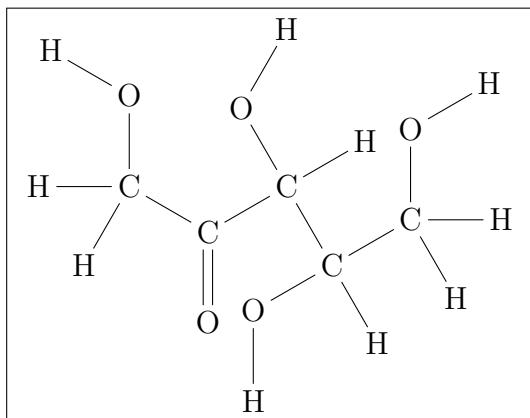


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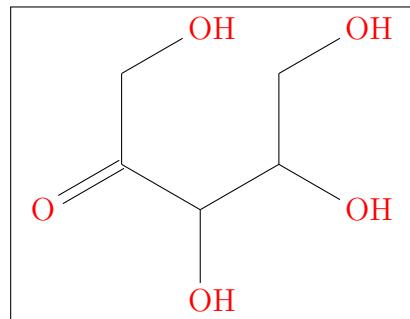


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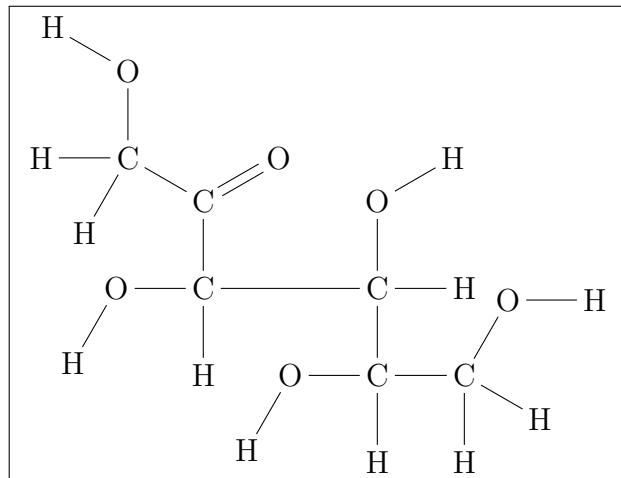


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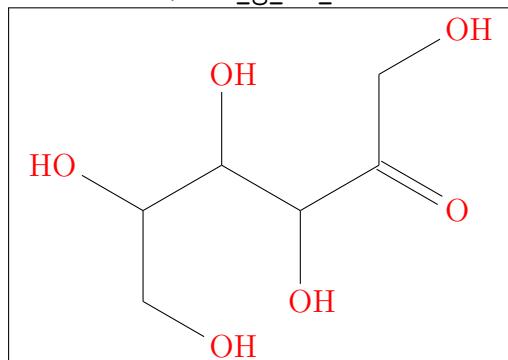


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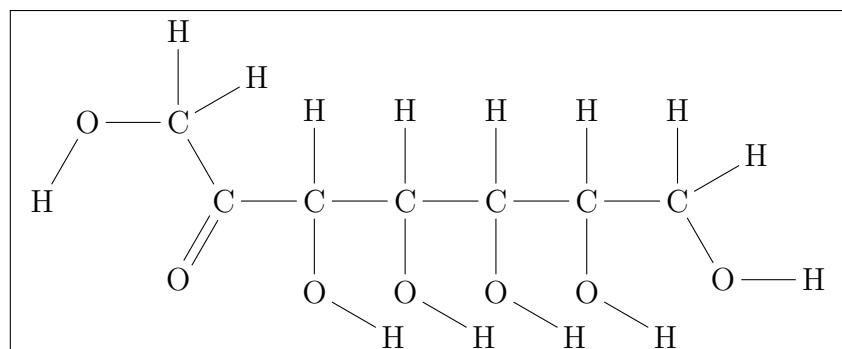


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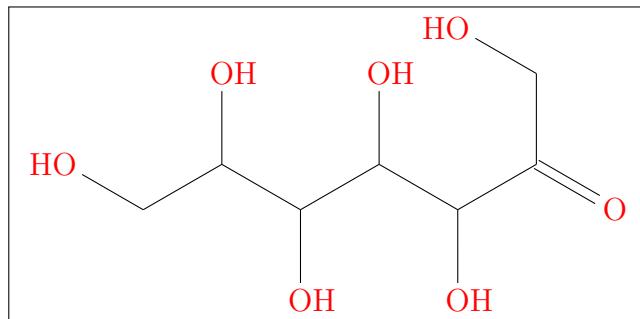


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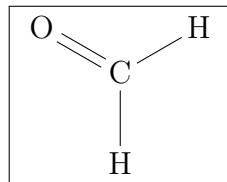


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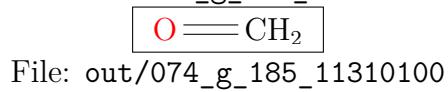


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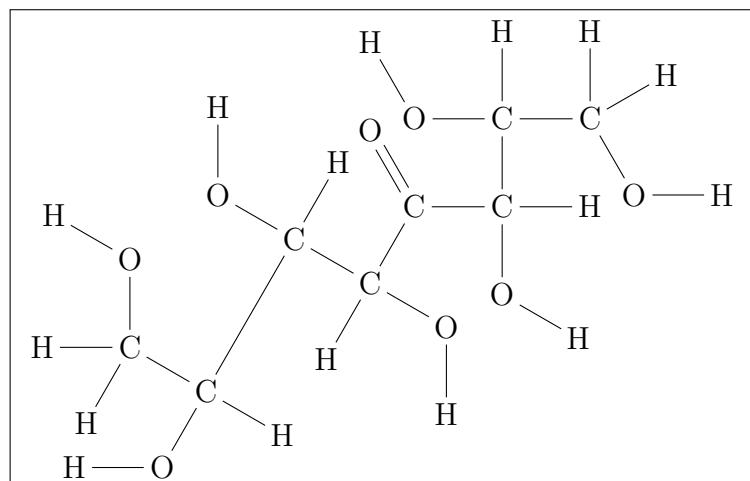


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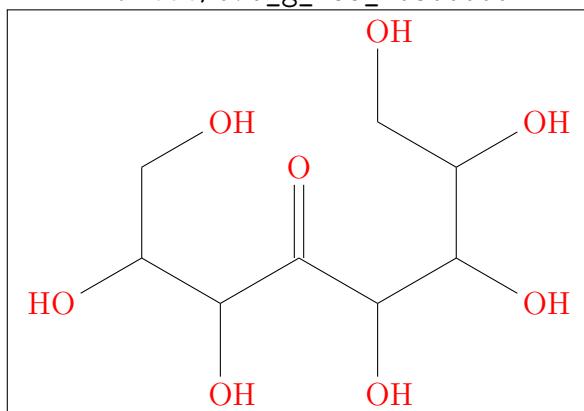


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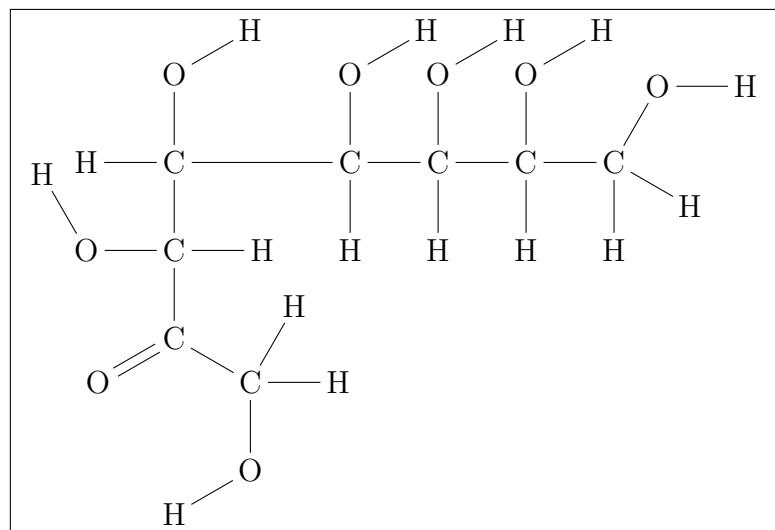


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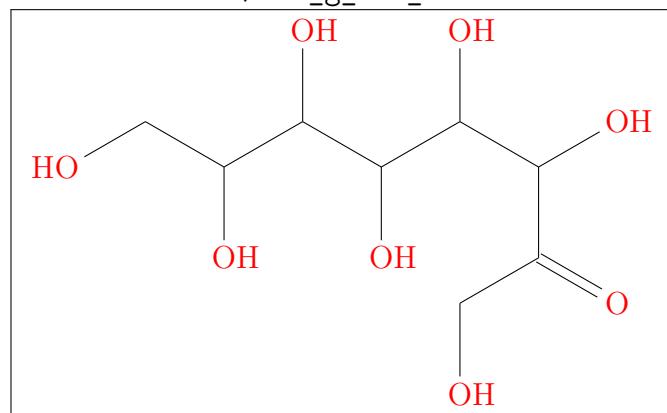


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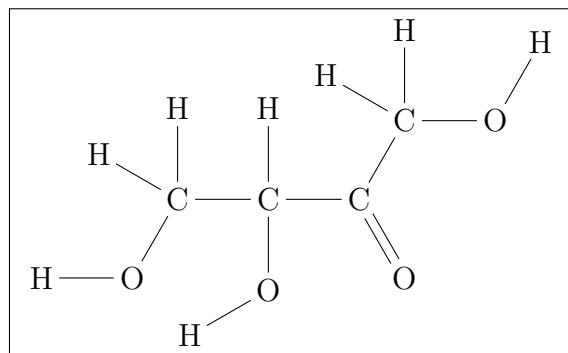


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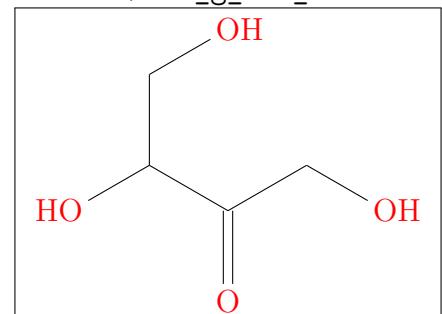


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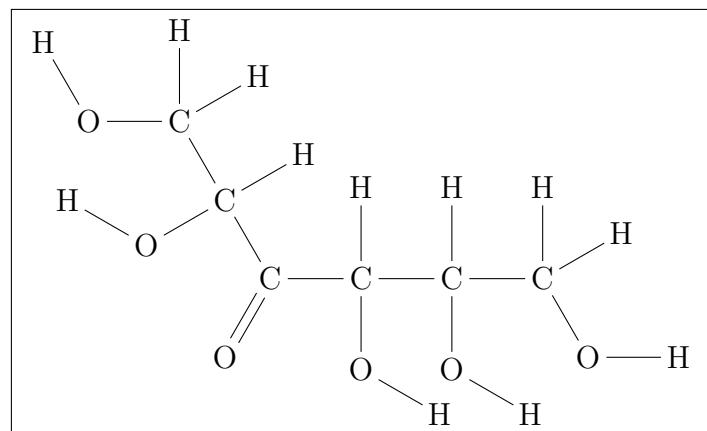


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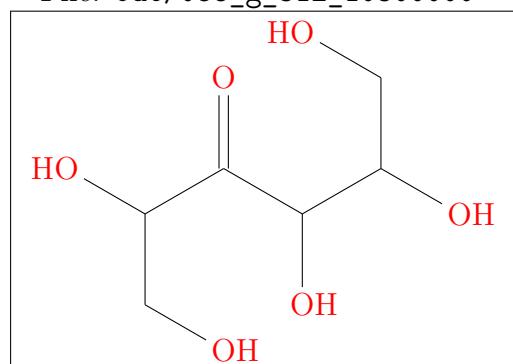


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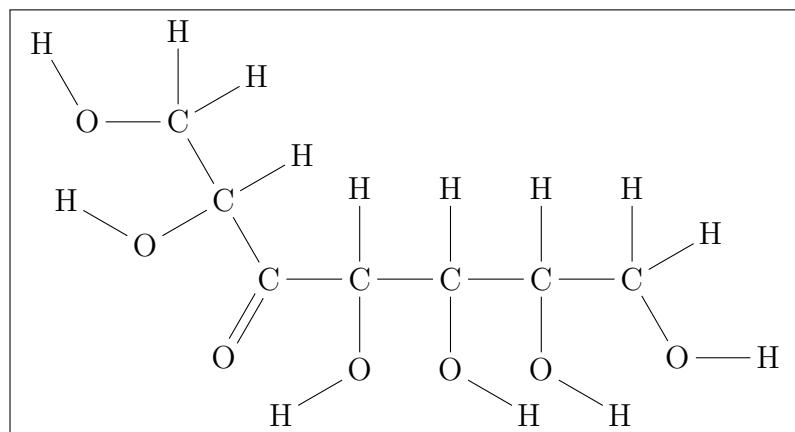


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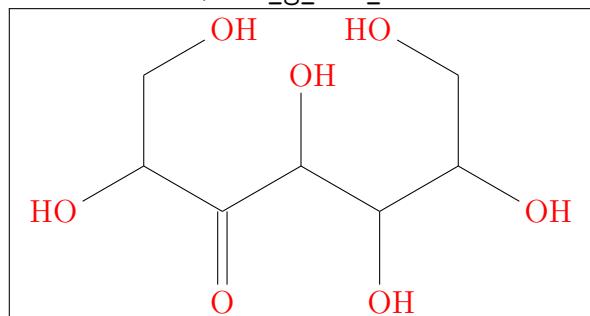


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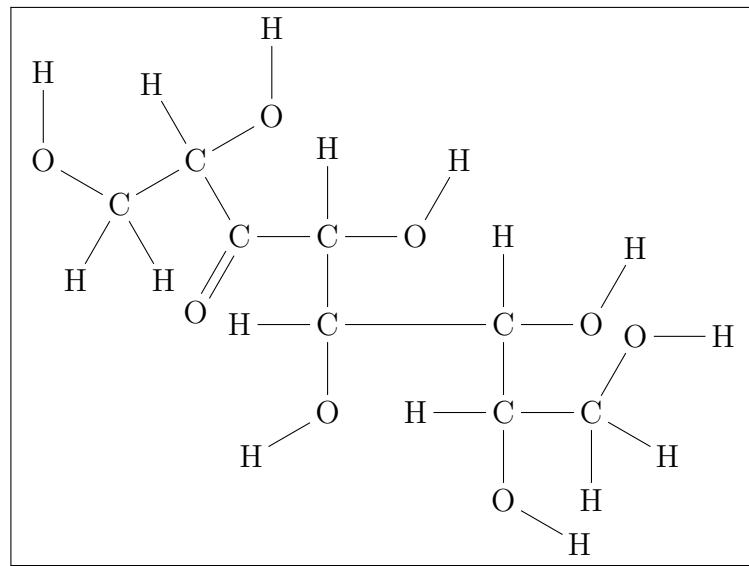


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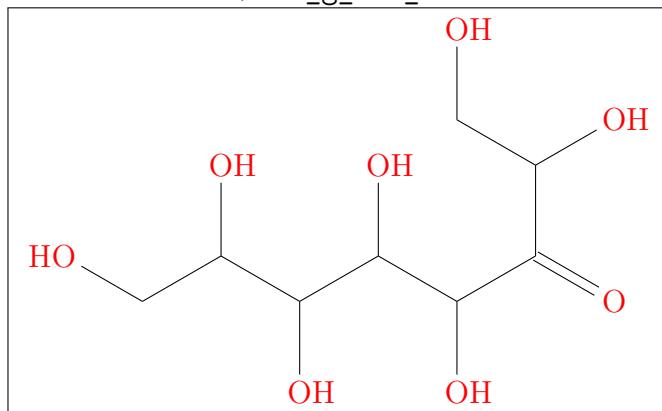


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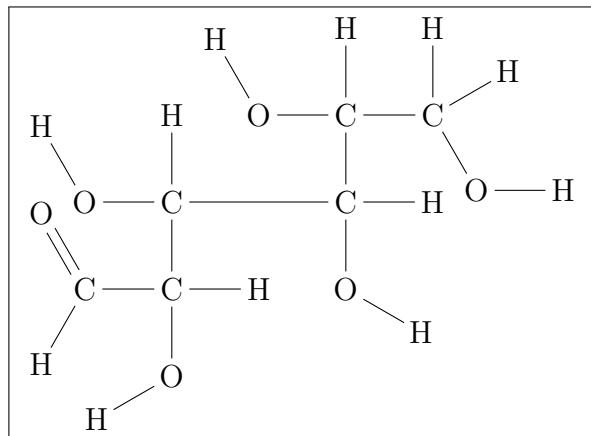


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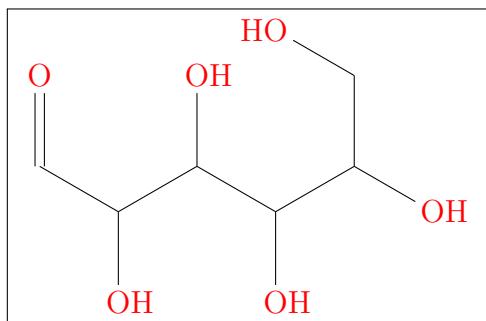


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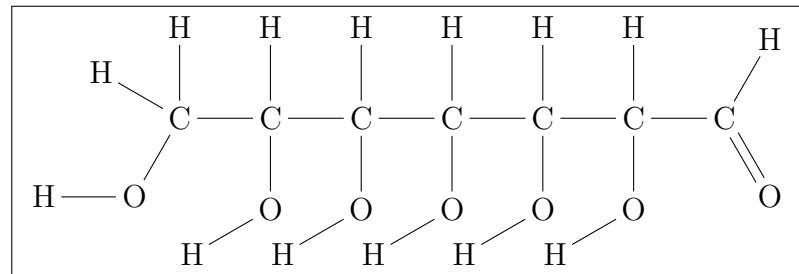


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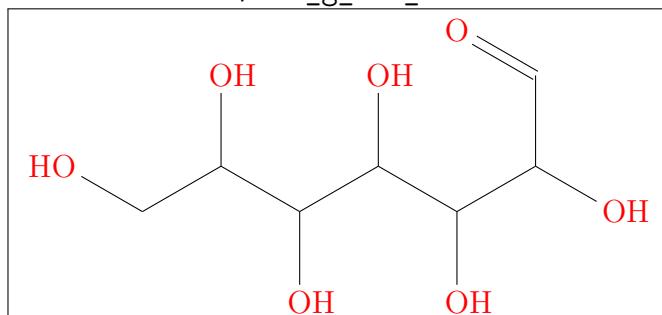


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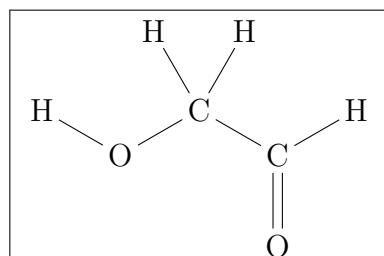


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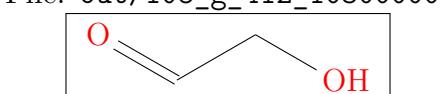


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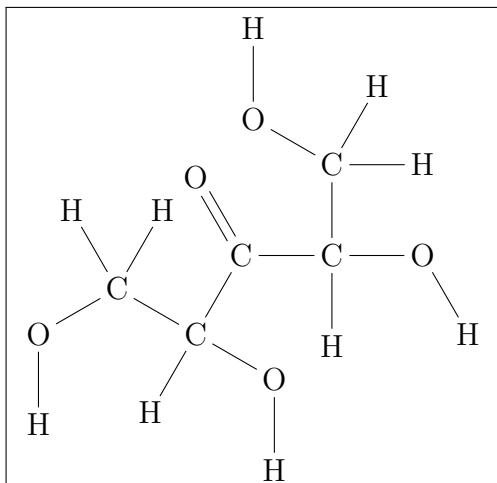


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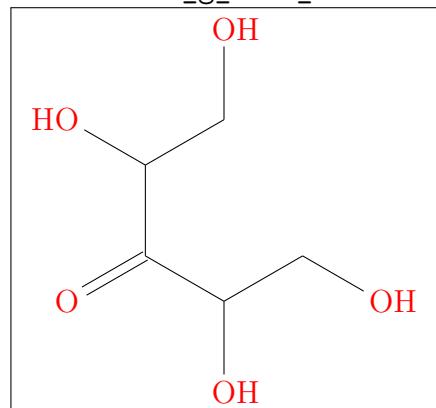


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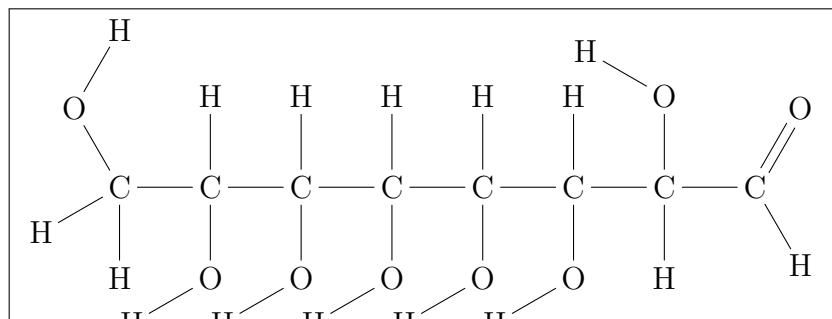


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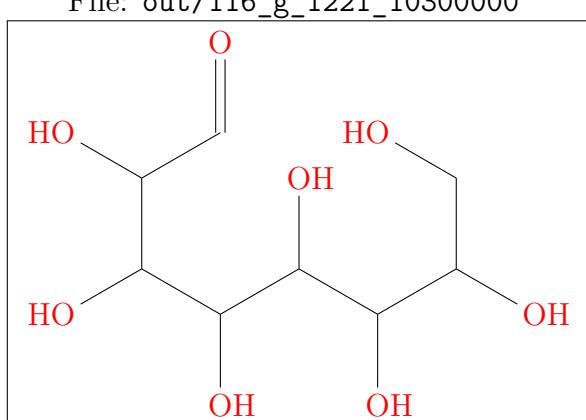


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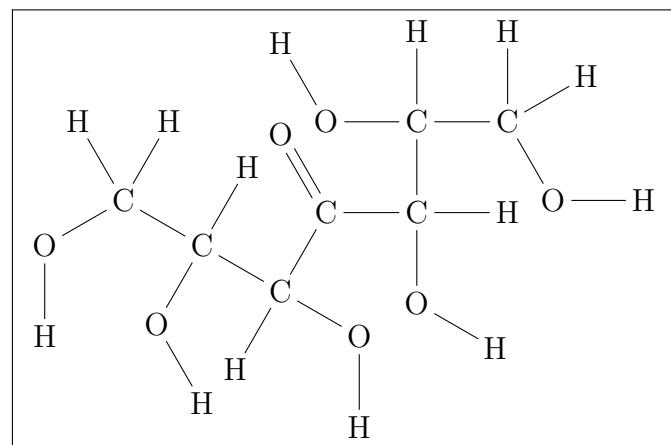
0.1.28 p_{0,57}



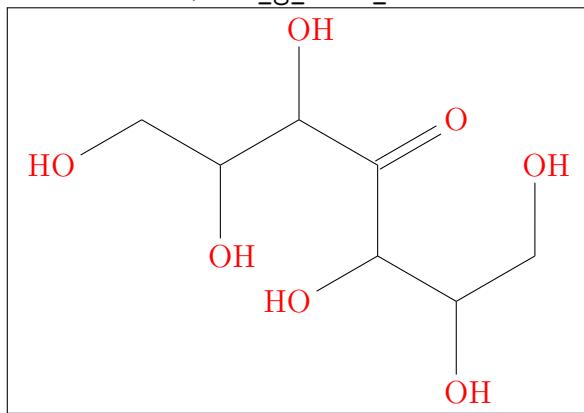
File: out/116_g_1221_10300000



0.1.29 p_{0,60}

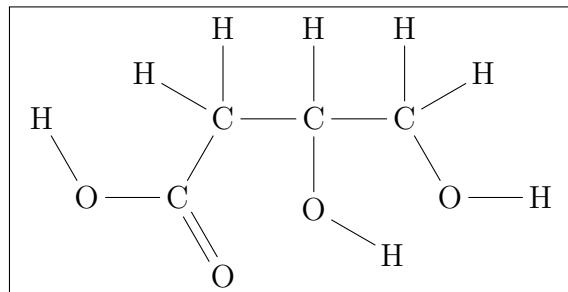


File: out/120_g_1309_10300000

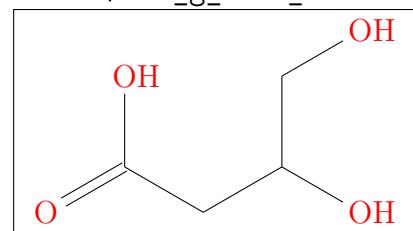


File: out/122_g_1309_11310100

0.1.30 p_{0,61}

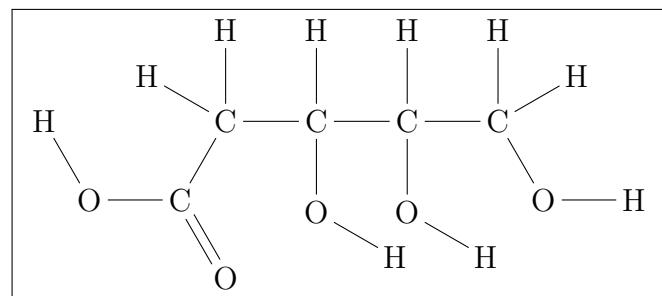


File: out/124_g_1429_10300000

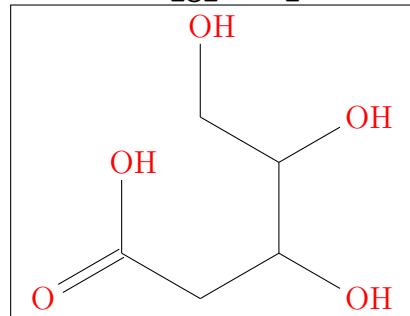


File: out/126_g_1429_11310100

0.1.31 p_{0,62}

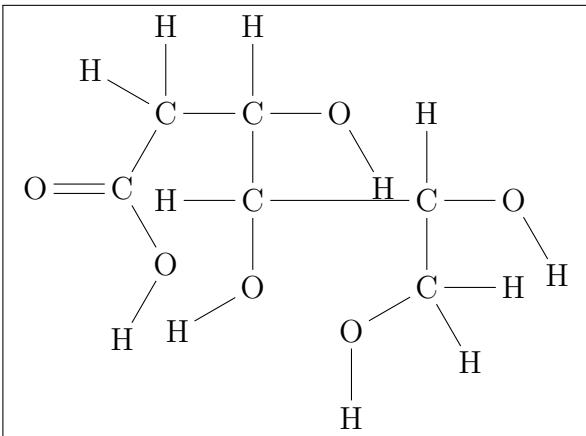


File: out/128_g_1437_10300000

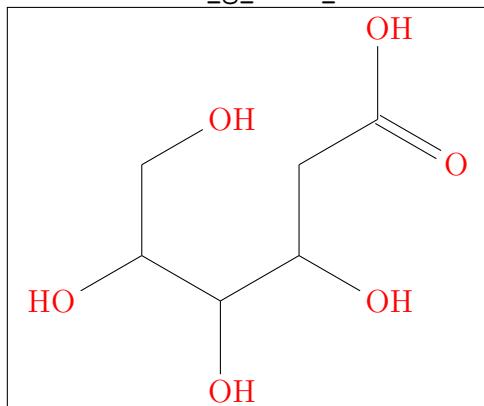


File: out/130_g_1437_11310100

0.1.32 p_{0,63}

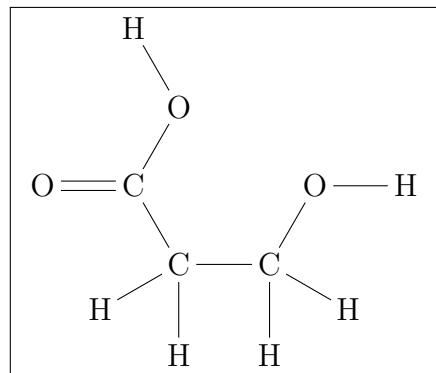


File: out/132_g_1445_10300000

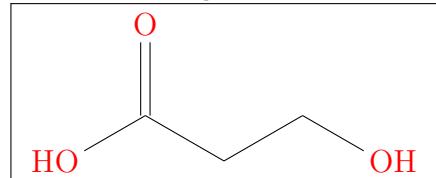


File: out/134_g_1445_11310100

0.1.33 p_{0,68}

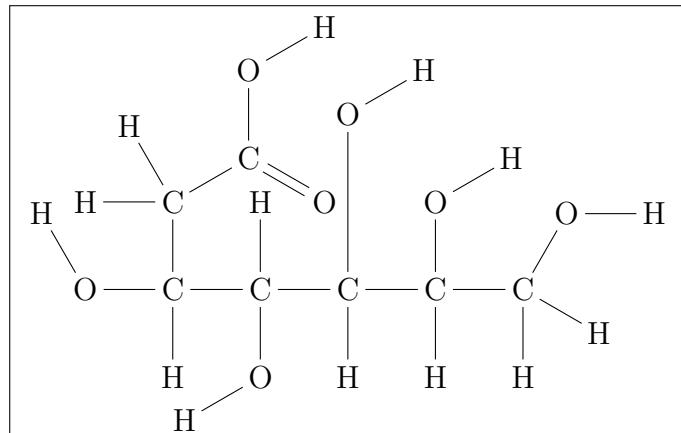


File: out/136_g_2596_10300000

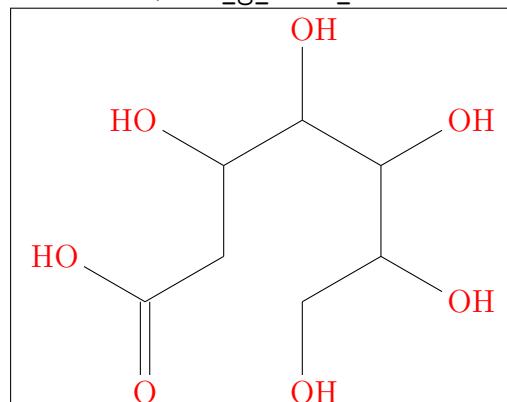


File: out/138_g_2596_11310100

0.1.34 p_{0,69}



File: out/140_g_2604_10300000



File: out/142_g_2604_11310100

0.2 Derivation Graph

0.2.1 DG Hyper, dg_0

Figure too large, see out/143_dg_0_11100_coord.pdf

File: out/279_dg_0_11100

$|V| = 81$
 $|E| = 414$

0.3 Enumerated Flows with 7 reactions

0.4 Enumerated Flows with 7 unique reactions

0.4.1 Solution 0

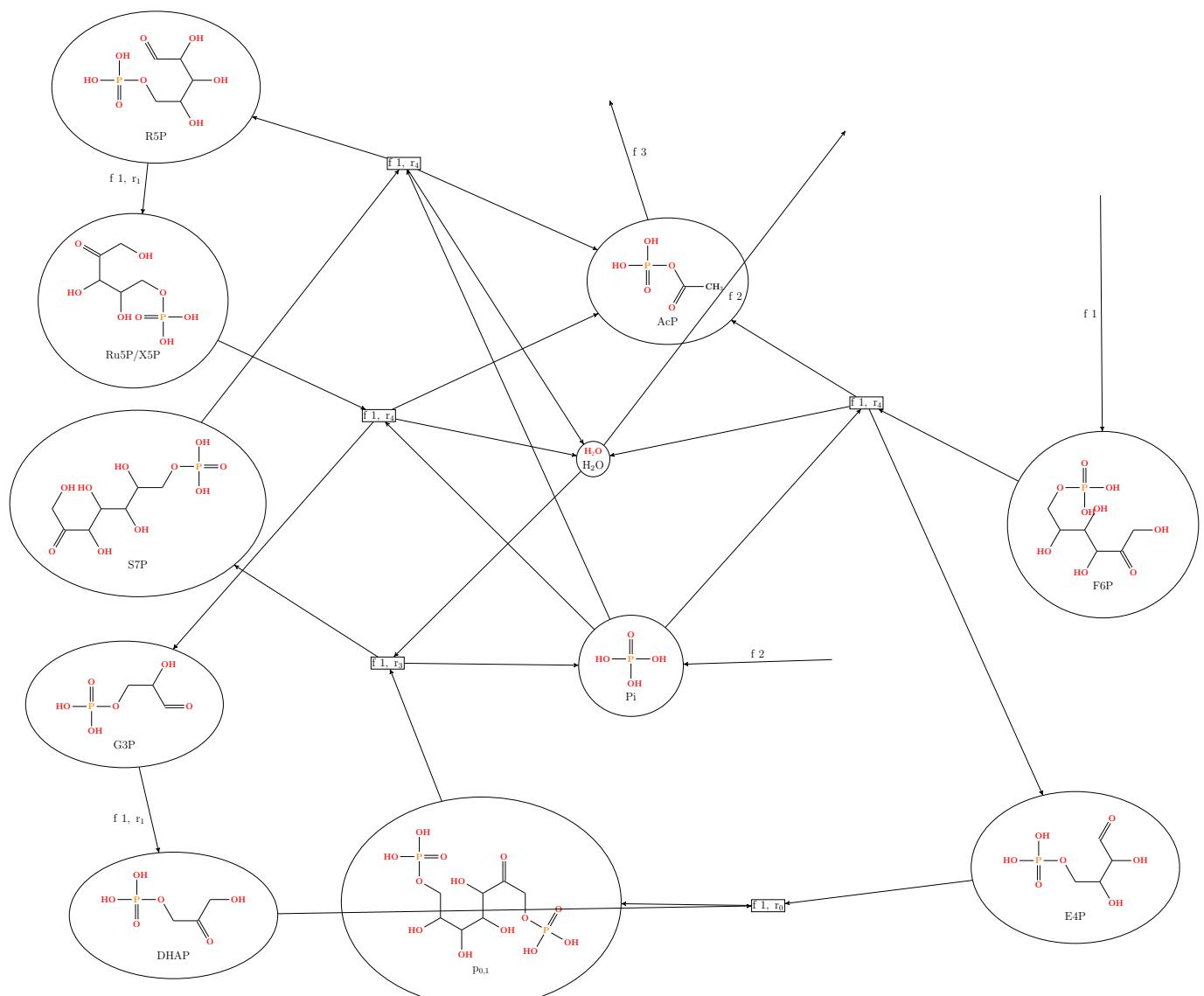
Overall Data

Objective value (integral): 7

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/284_dg_0_11100_f_0_0_filt

$|E| = 7 \quad |P| = 7$

- 0.5 Enumerated Flows with 8 unique reactions
- 0.6 Enumerated Flows with 9 unique reactions
- 0.7 Enumerated Flows with 10 unique reactions
- 0.8 Enumerated Flows with 11 unique reactions
- 0.9 Enumerated Flows with 8 reactions
- 0.10 Enumerated Flows with 7 unique reactions

0.10.1 Solution 1

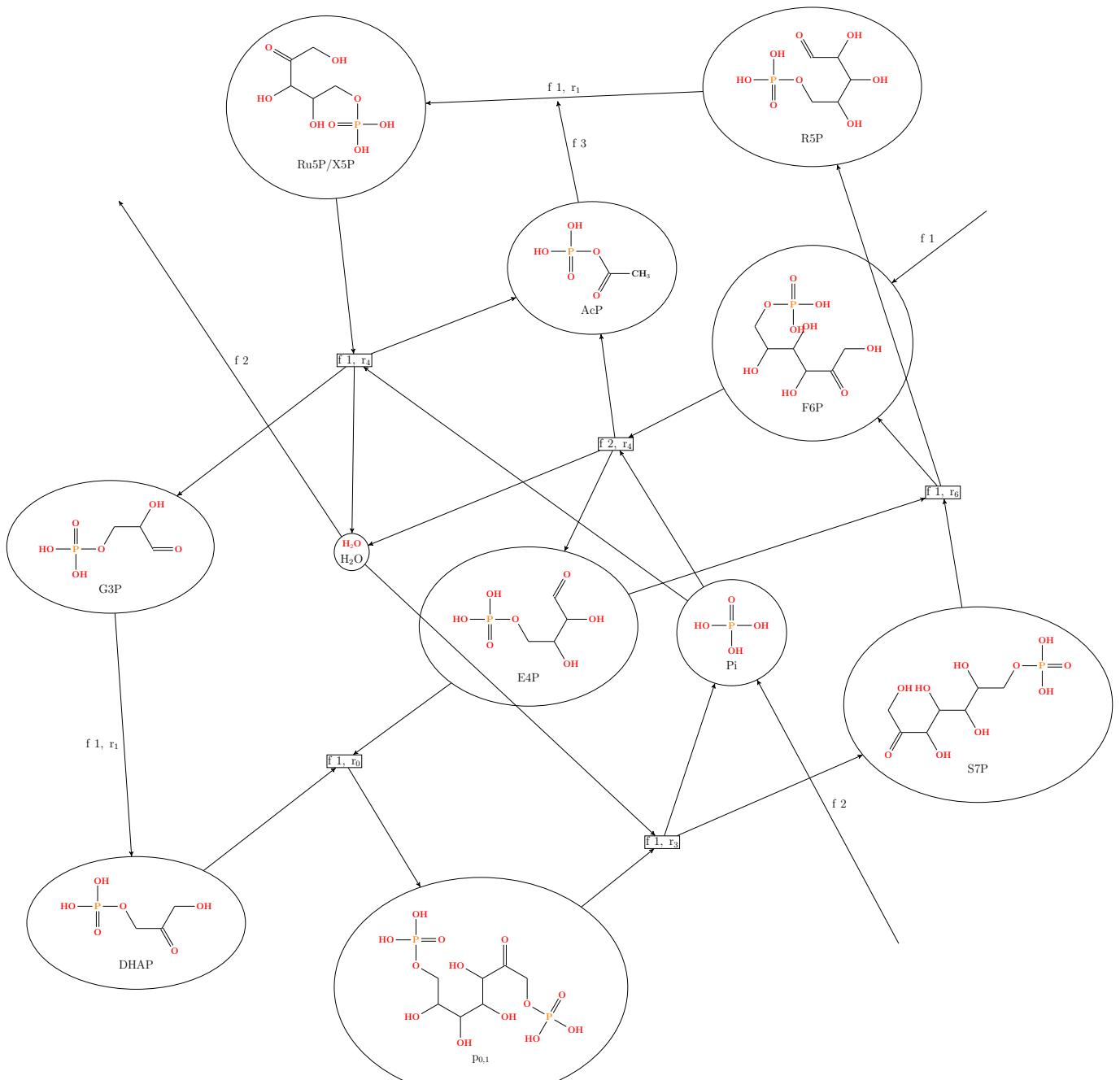
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/289 dg 0 11100 f 0 1 filt

$$|E|=7 \quad |P|=8$$

0.10.2 Solution 2

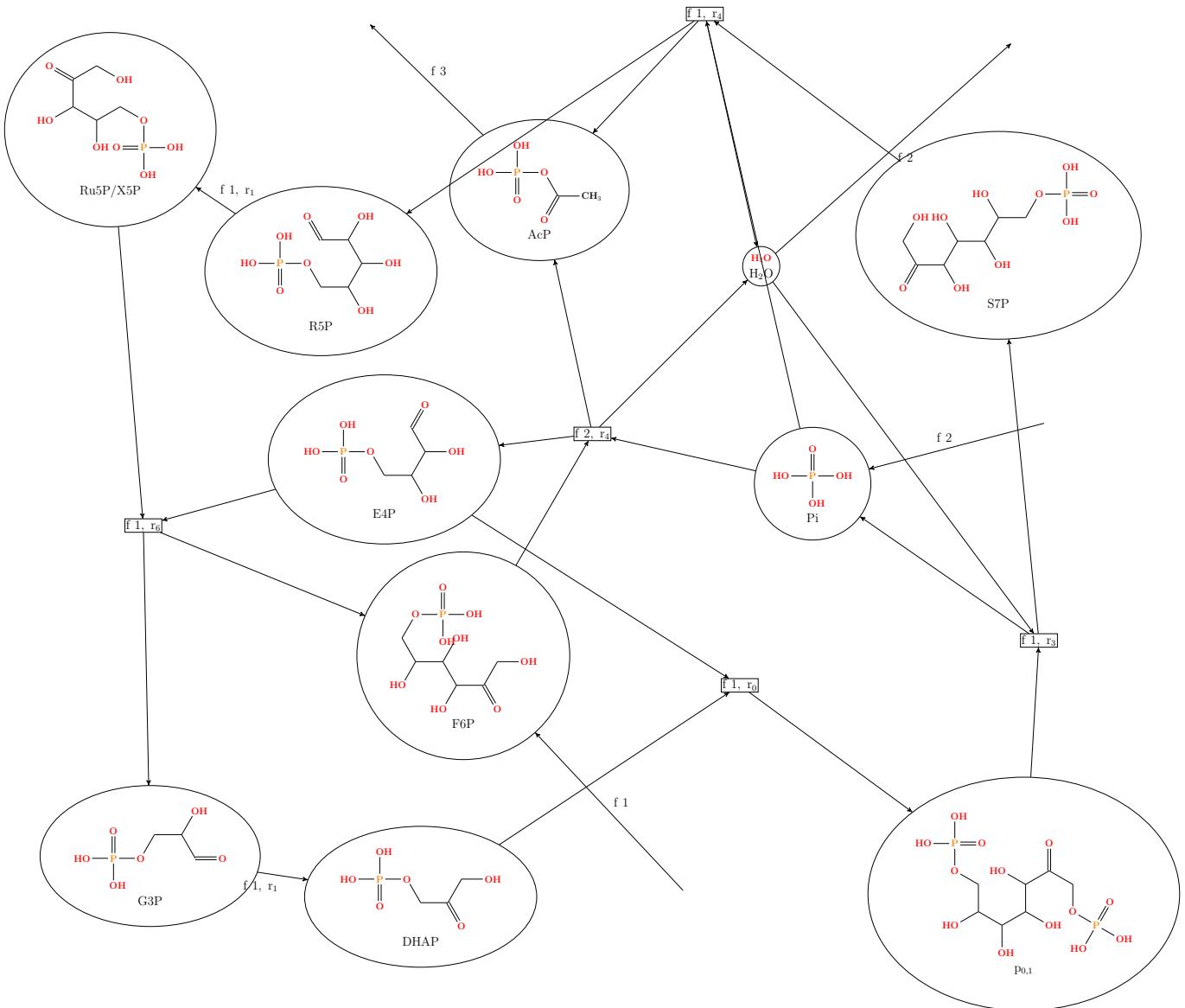
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/294_dg_0_11100_f_0_2_filt

$$|E| = 7 \quad |P| = 8$$

0.10.3 Solution 3

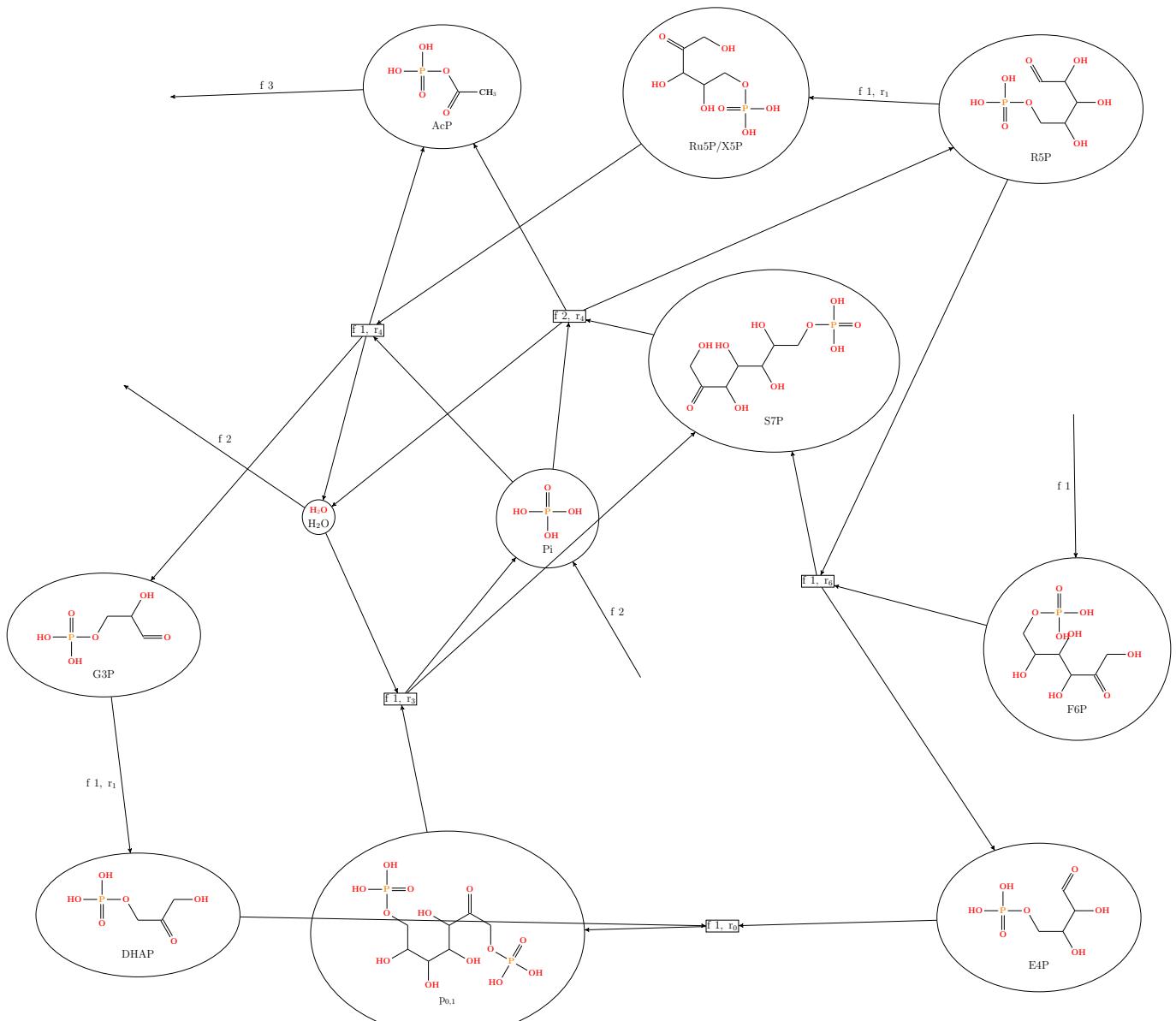
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/299_dg_0_11100_f_0_3_filt

$$|E| = 7 \quad |P| = 8$$

0.10.4 Solution 5

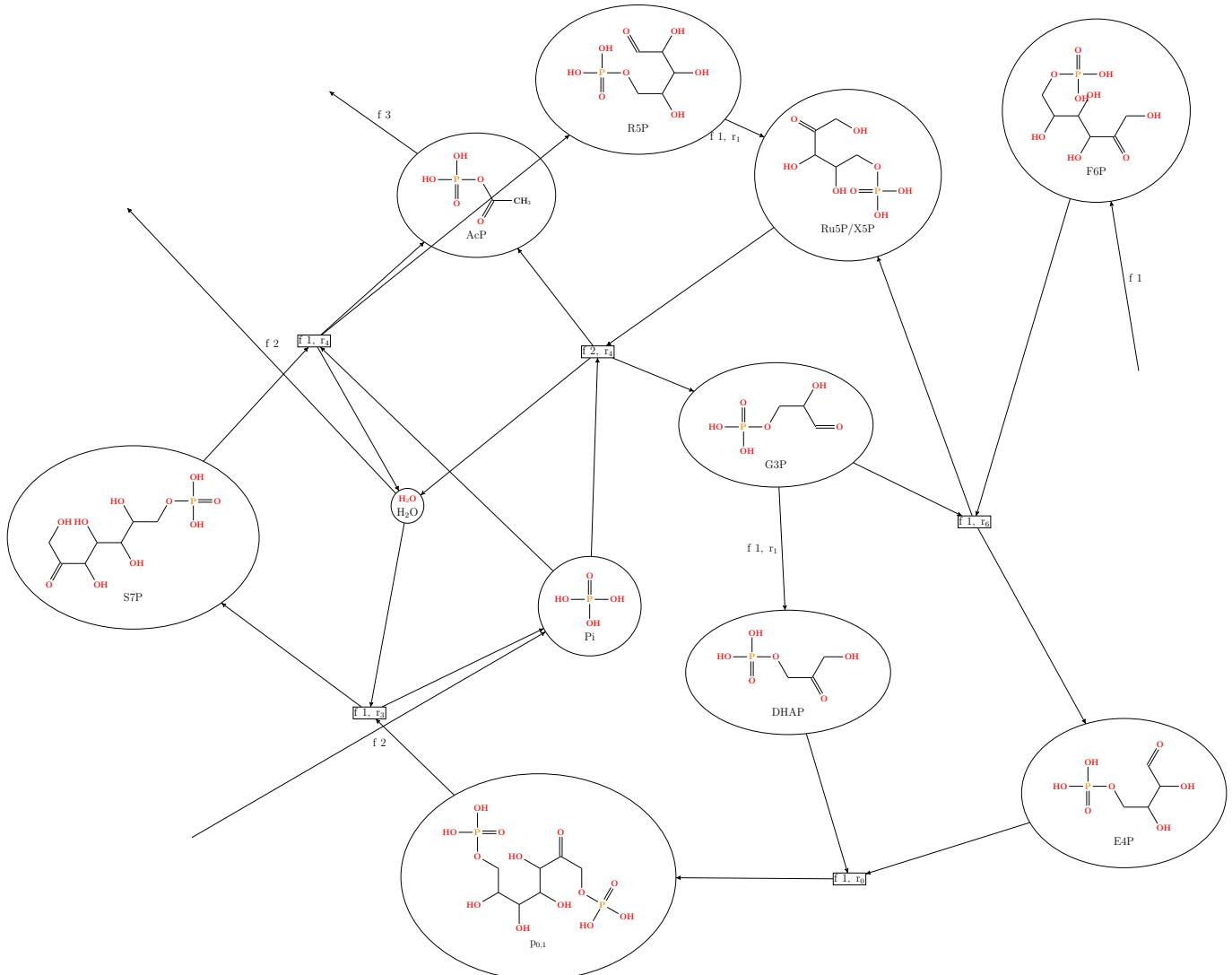
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/304_dg_0_11100_f_0_5_filt

$$|E| = 7 \quad |P| = 8$$

0.10.5 Solution 11

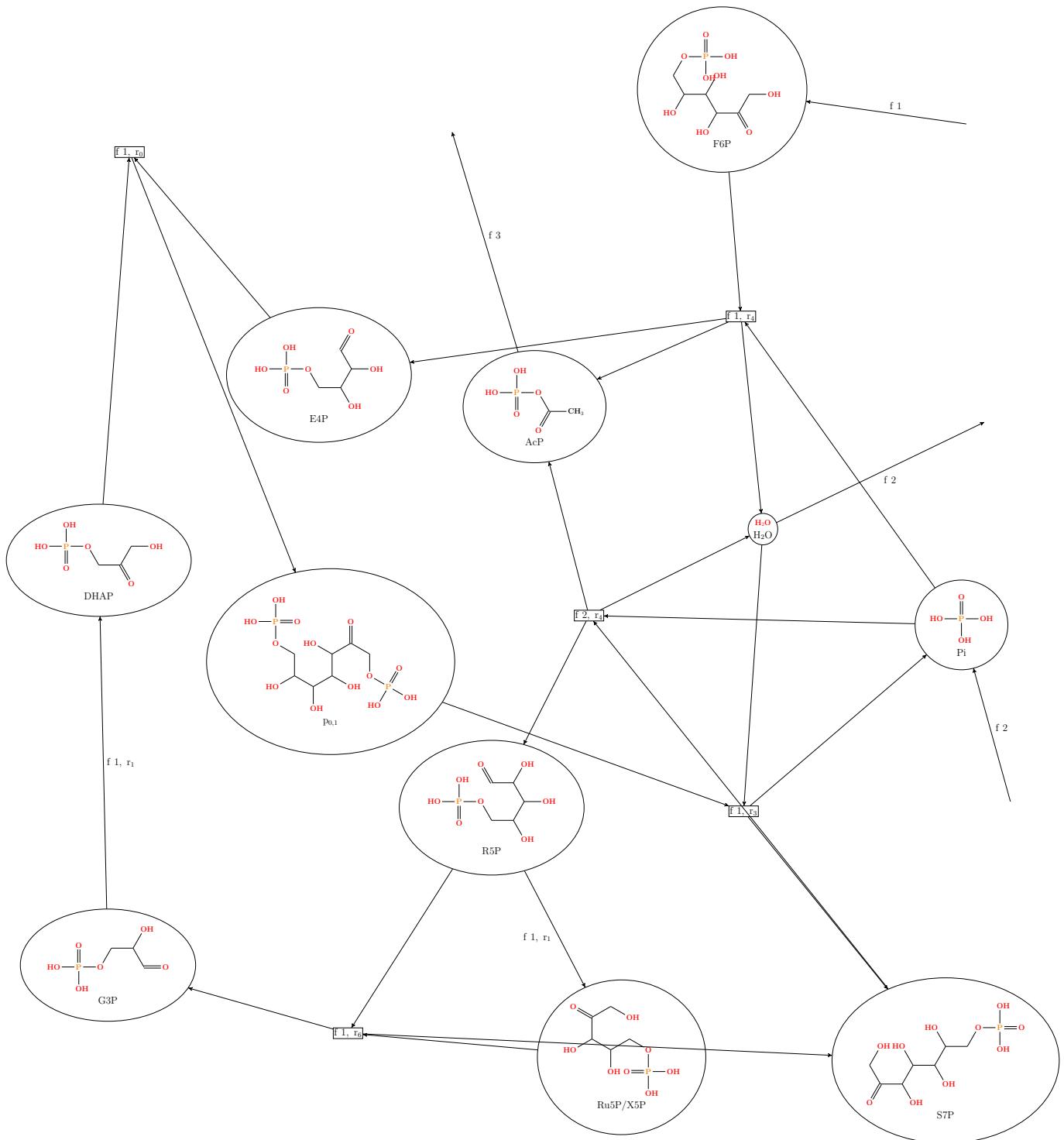
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/309_dg_0_11100_f_0_11_filt

$$|E| = 7 \quad |P| = 8$$

0.10.6 Solution 14

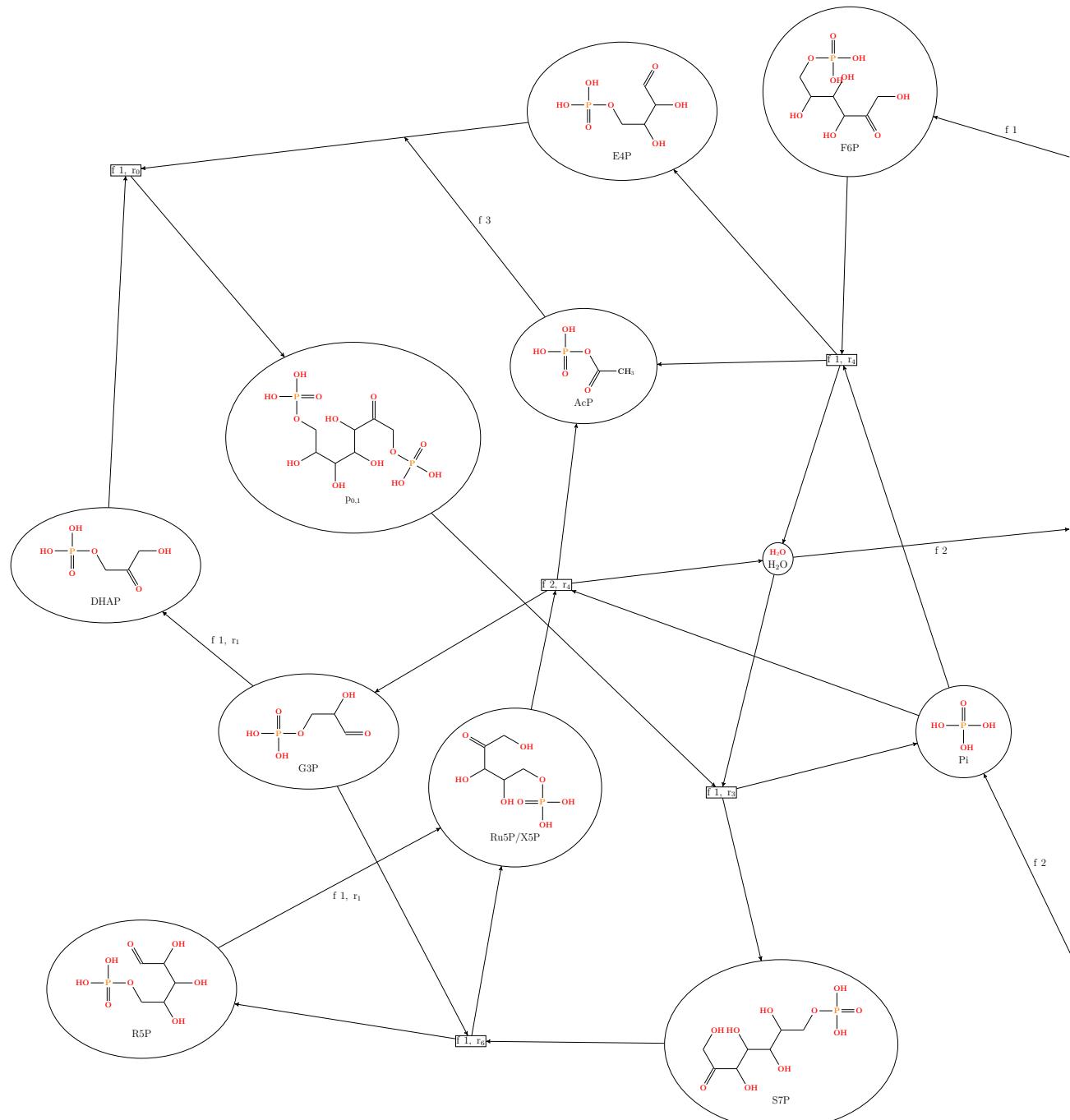
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/314_dg_0_11100_f_0_14_filt

$$|E| = 7 \quad |P| = 8$$

0.11 Enumerated Flows with 8 unique reactions

0.11.1 Solution 4

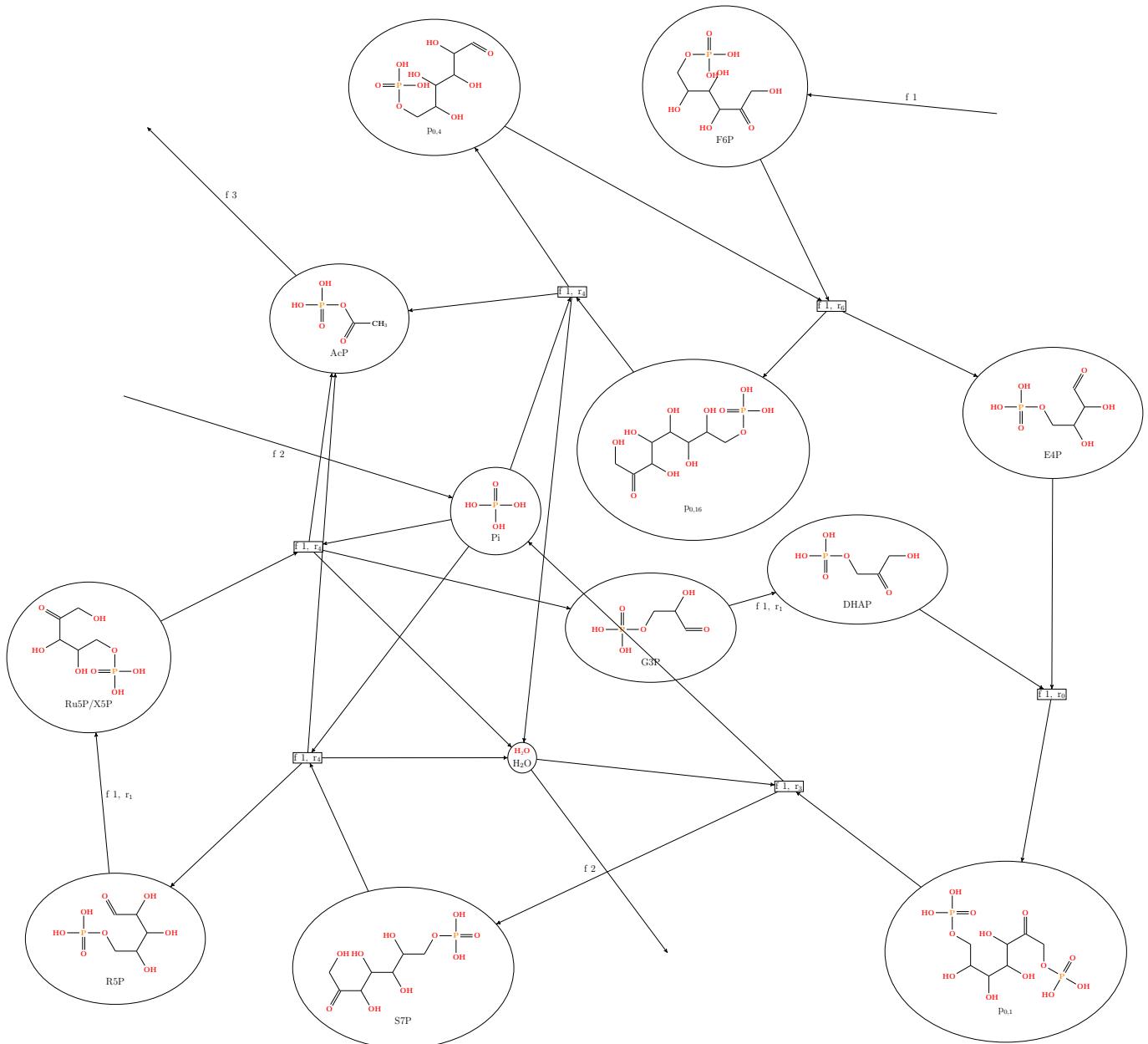
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/319_dg_0_11100_f_0_4_filt

$|E| = 8 \ |P| = 8$

0.11.2 Solution 6

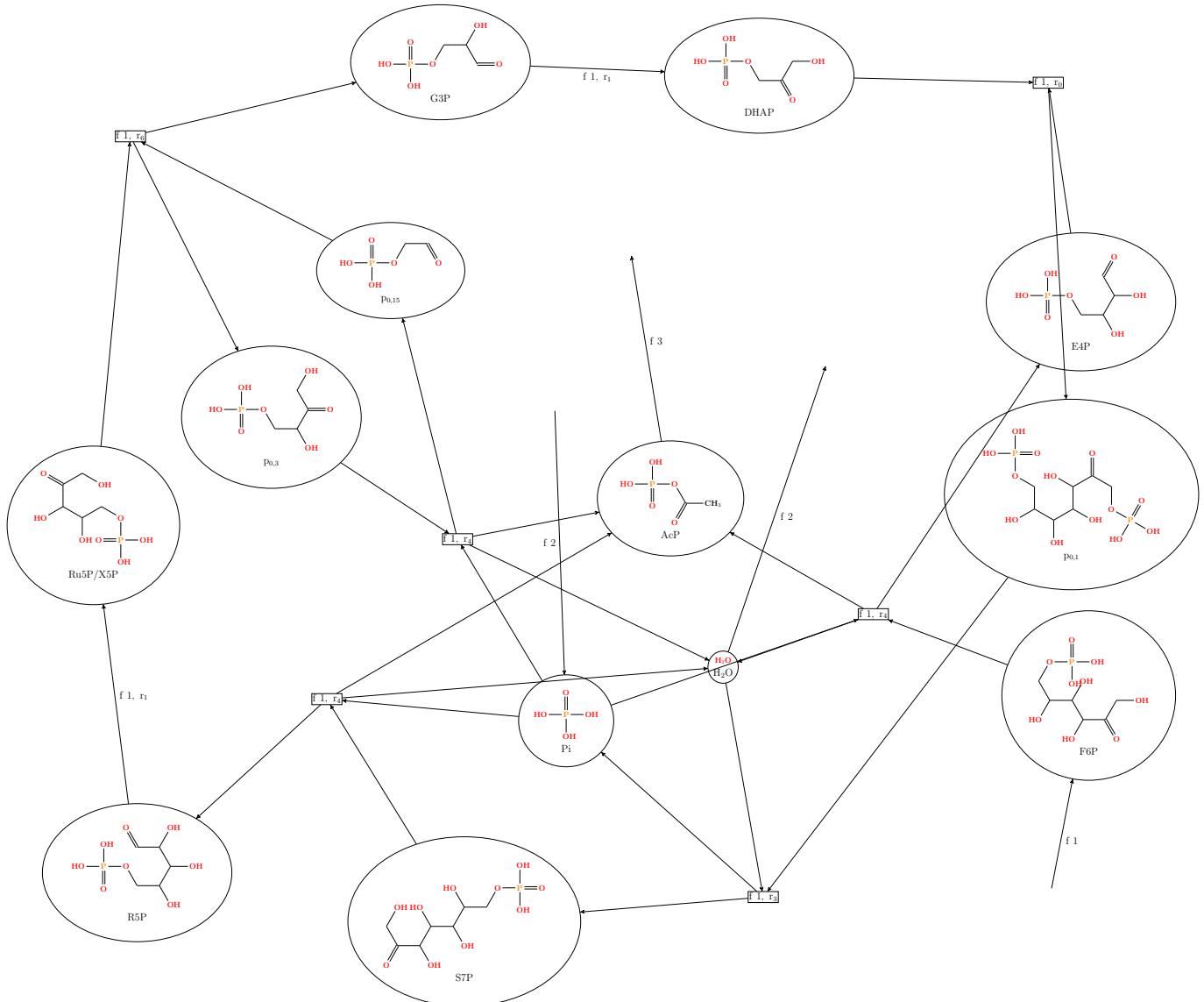
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/324_dg_0_11100_f_0_6_filt

|E| = 8 |P| = 8

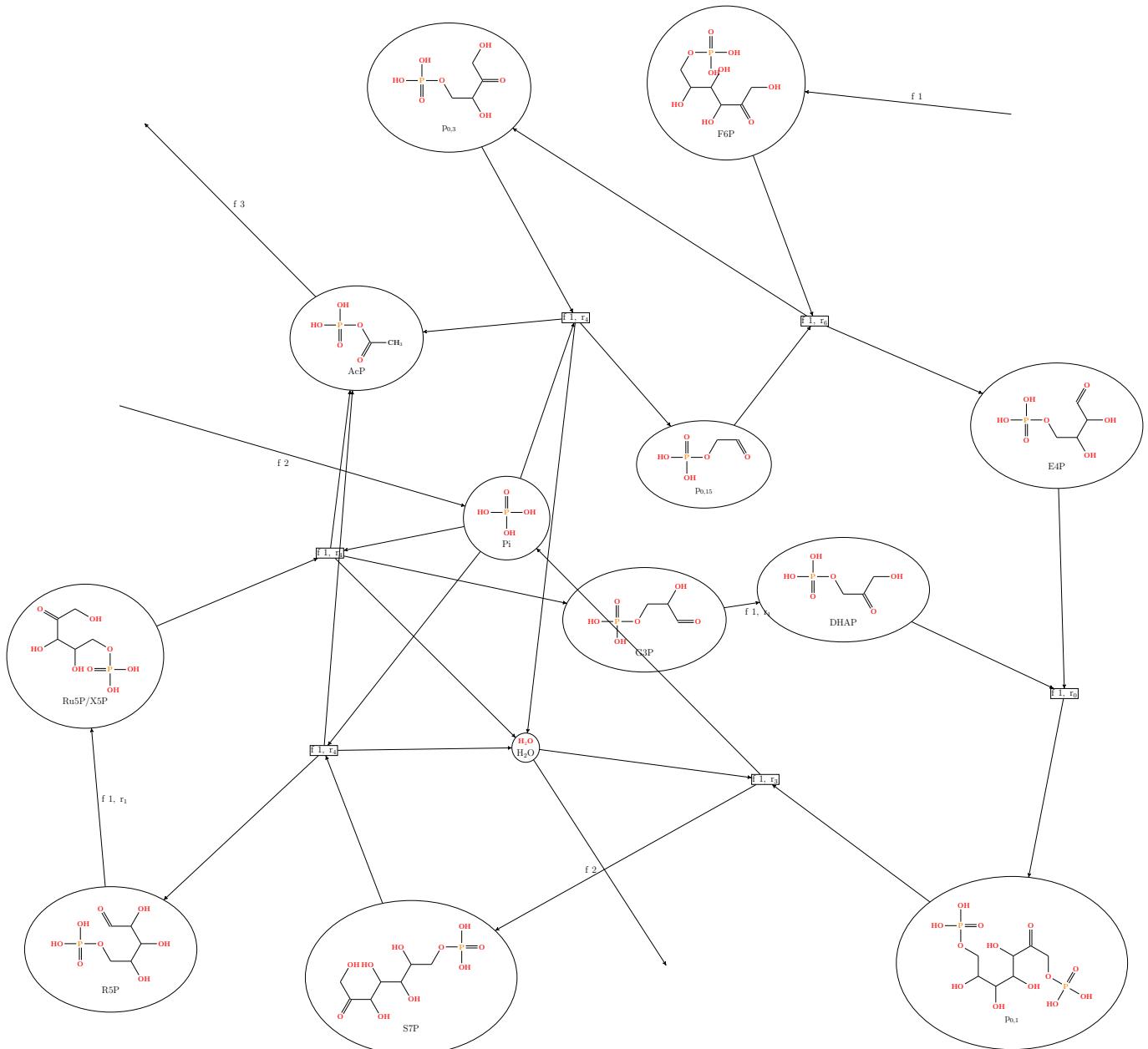
0.11.3 Solution 7

Overall Data

Objective value (integral): 8

Vertex/Graph	In	Out
AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/329_dg_0_11100_f_0_7_filt

$$|E| = 8 \quad |P| = 8$$

0.11.4 Solution 8

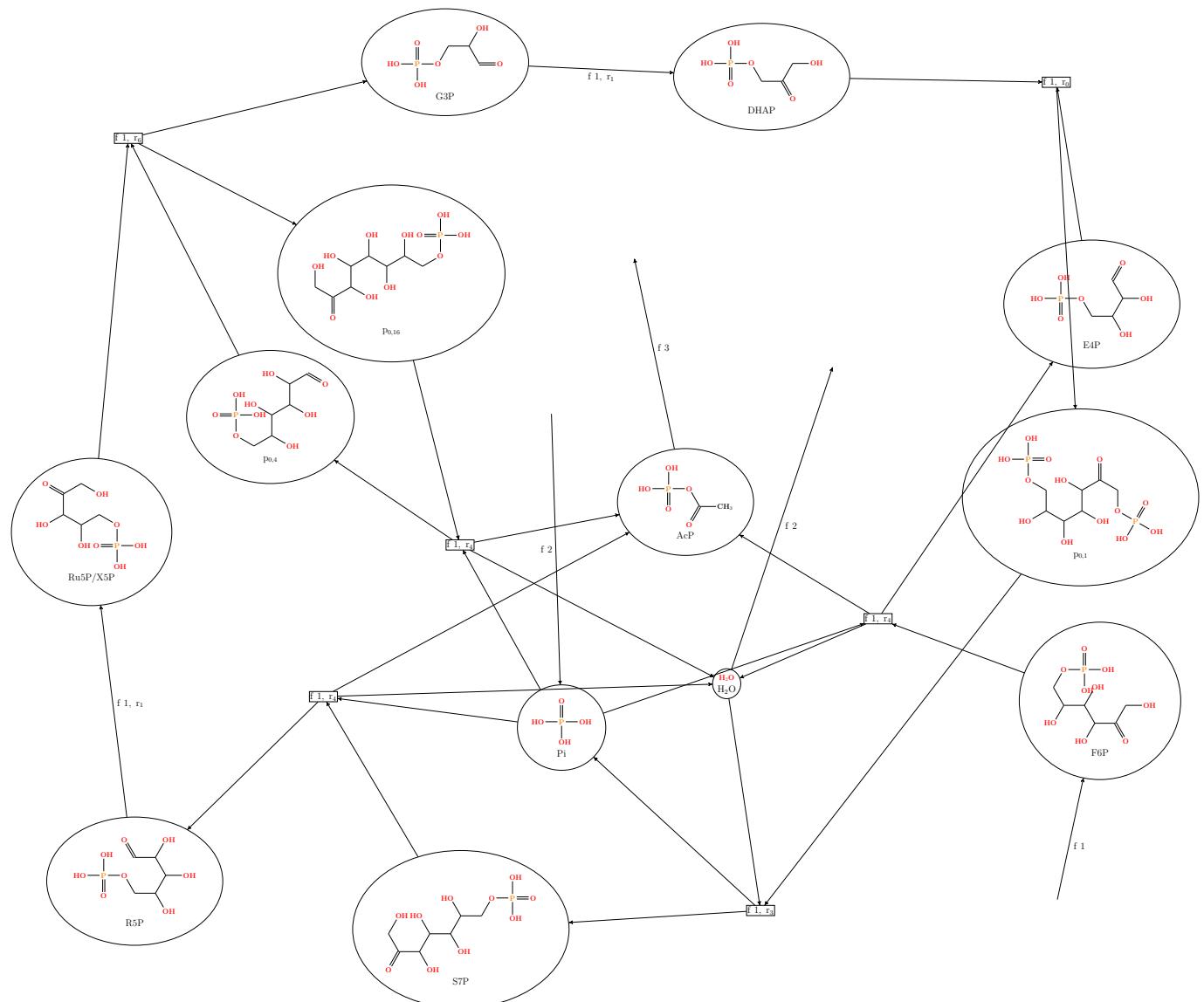
Overall Data

Objective value (integral): 8

Vertex/Graph	In	Out
AcP	0	3
F6P	1	0
H ₂ 0	0	2
Pi	2	0

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/334_dg_0_11100_f_0_8_filt

$$|E| = 8 \quad |P| = 8$$

0.11.5 Solution 9

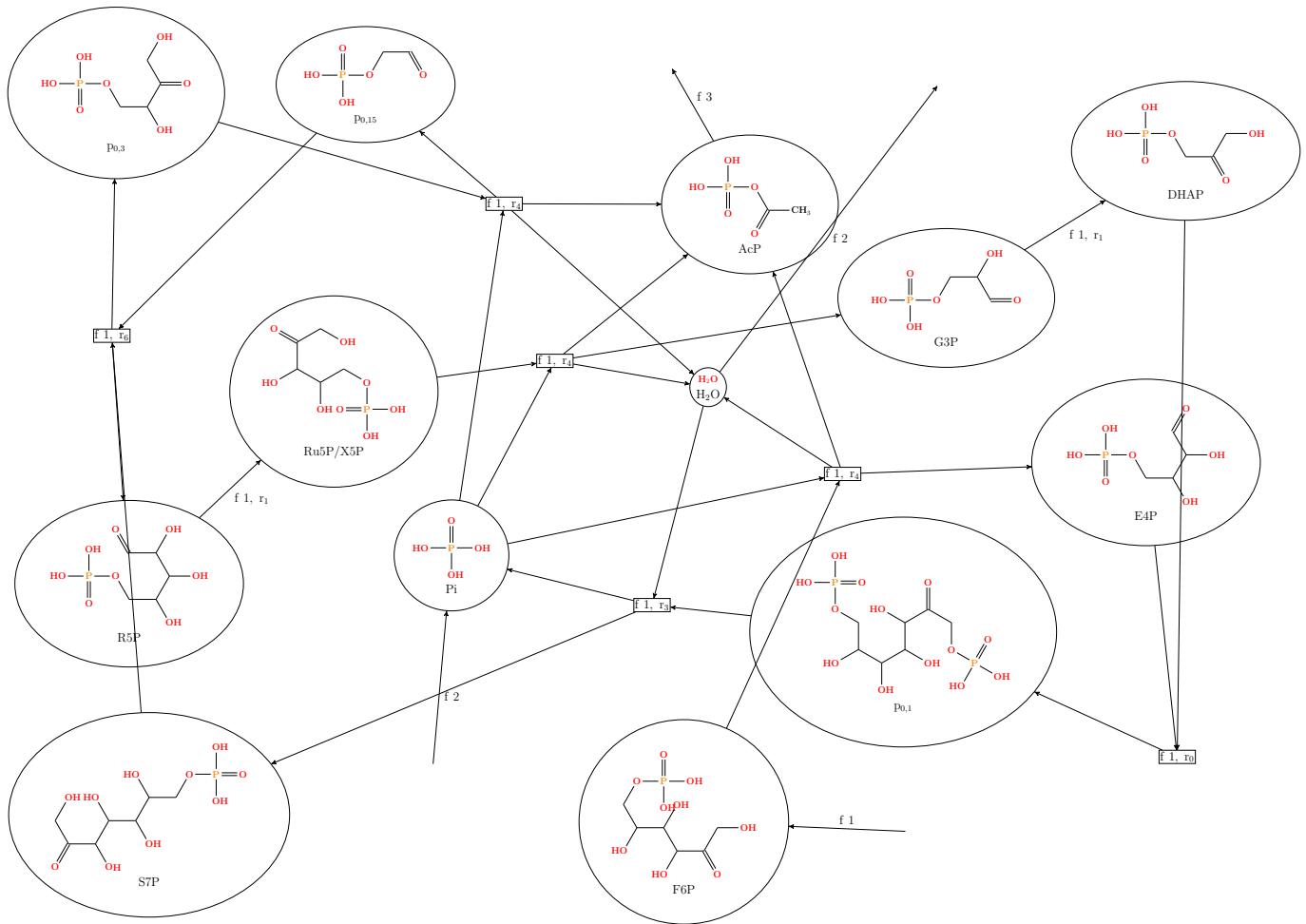
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/339_dg_0_11100_f_0_9_filt

$$|E| = 8 \quad |P| = 8$$

0.11.6 Solution 10

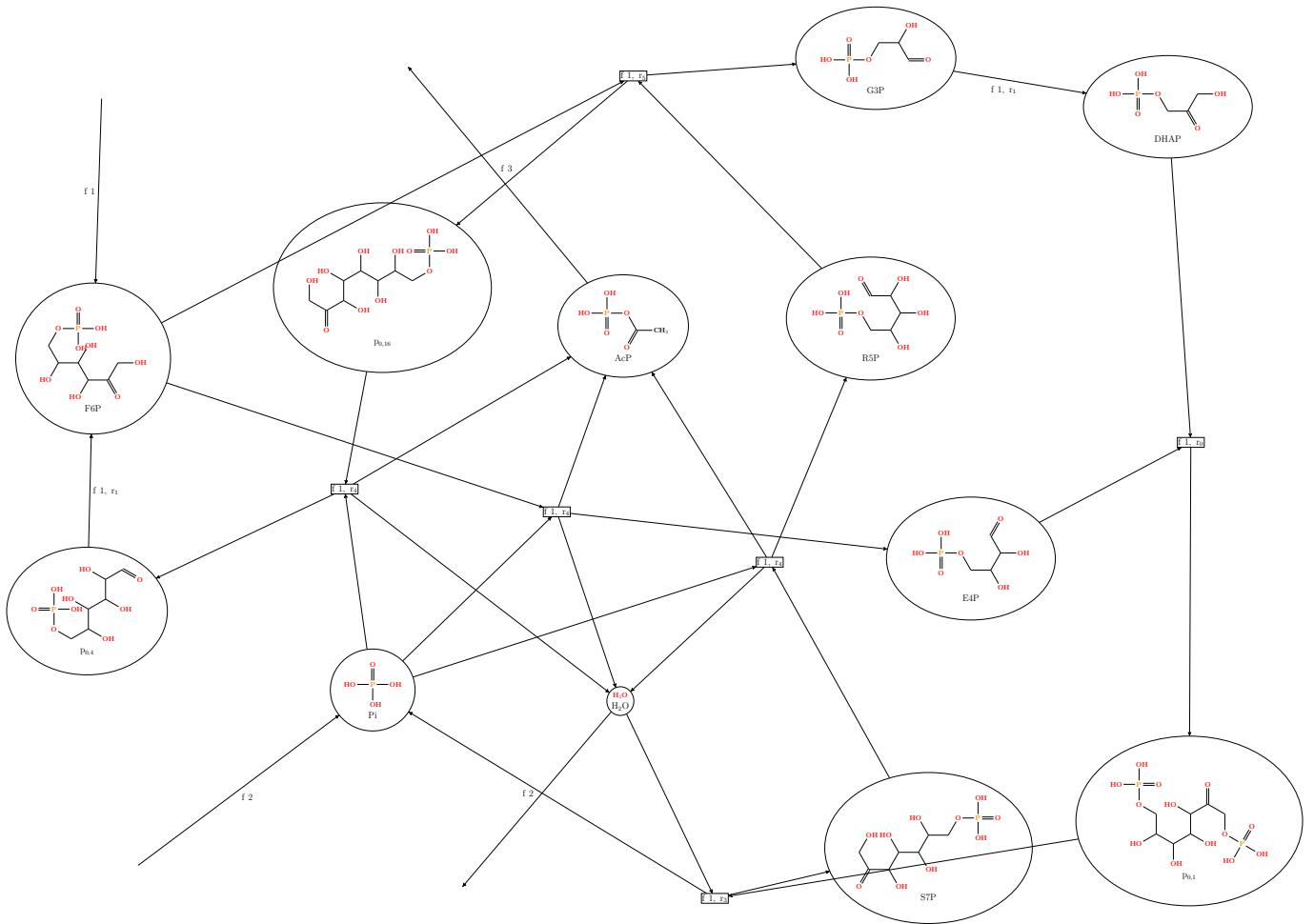
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/344_dg_0_11100_f_0_10_filt

$$|E| = 8 \quad |P| = 8$$

0.11.7 Solution 12

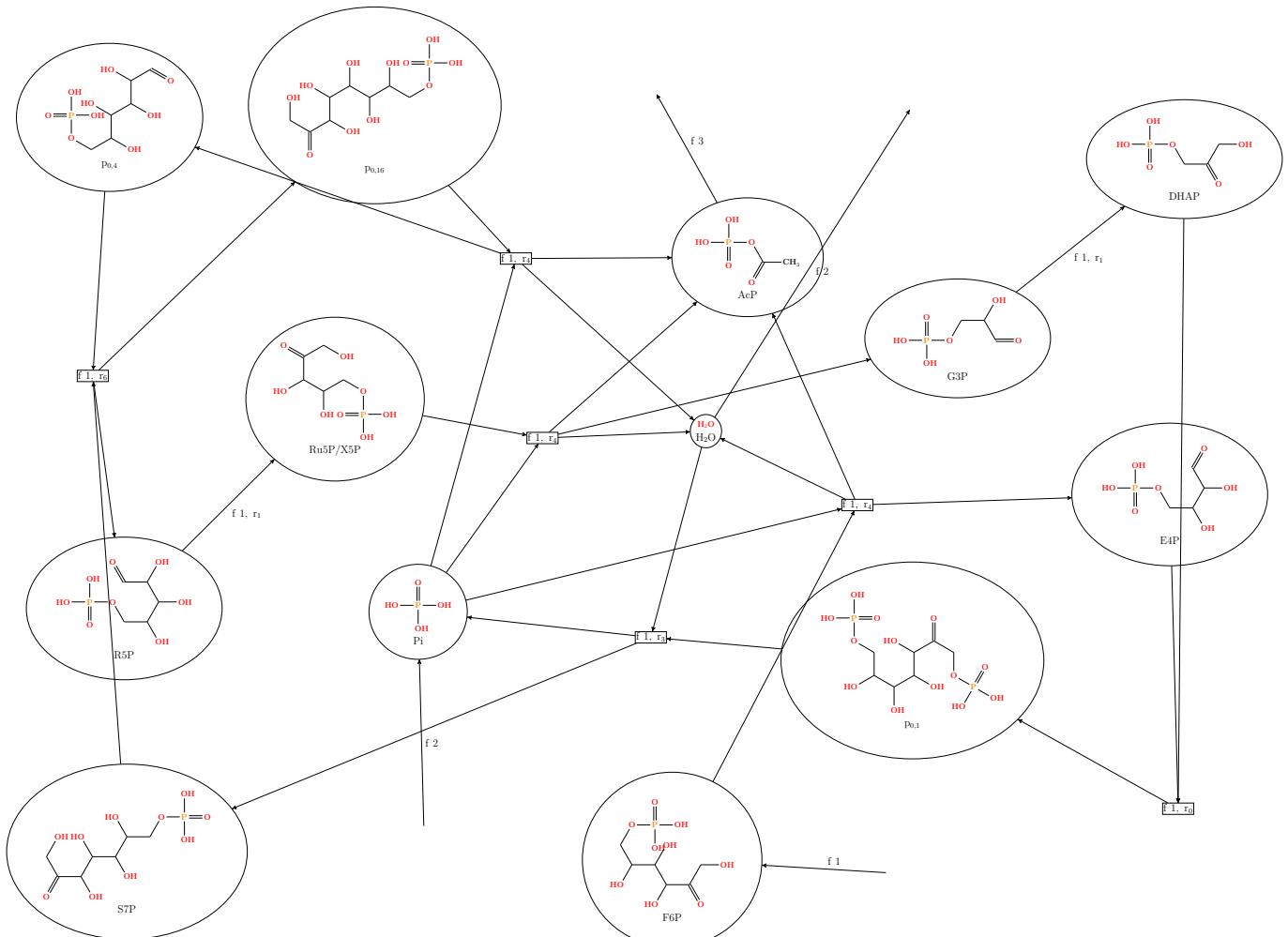
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/349_dg_0_11100_f_0_12_filt

$$|E| = 8 \quad |P| = 8$$

0.11.8 Solution 13

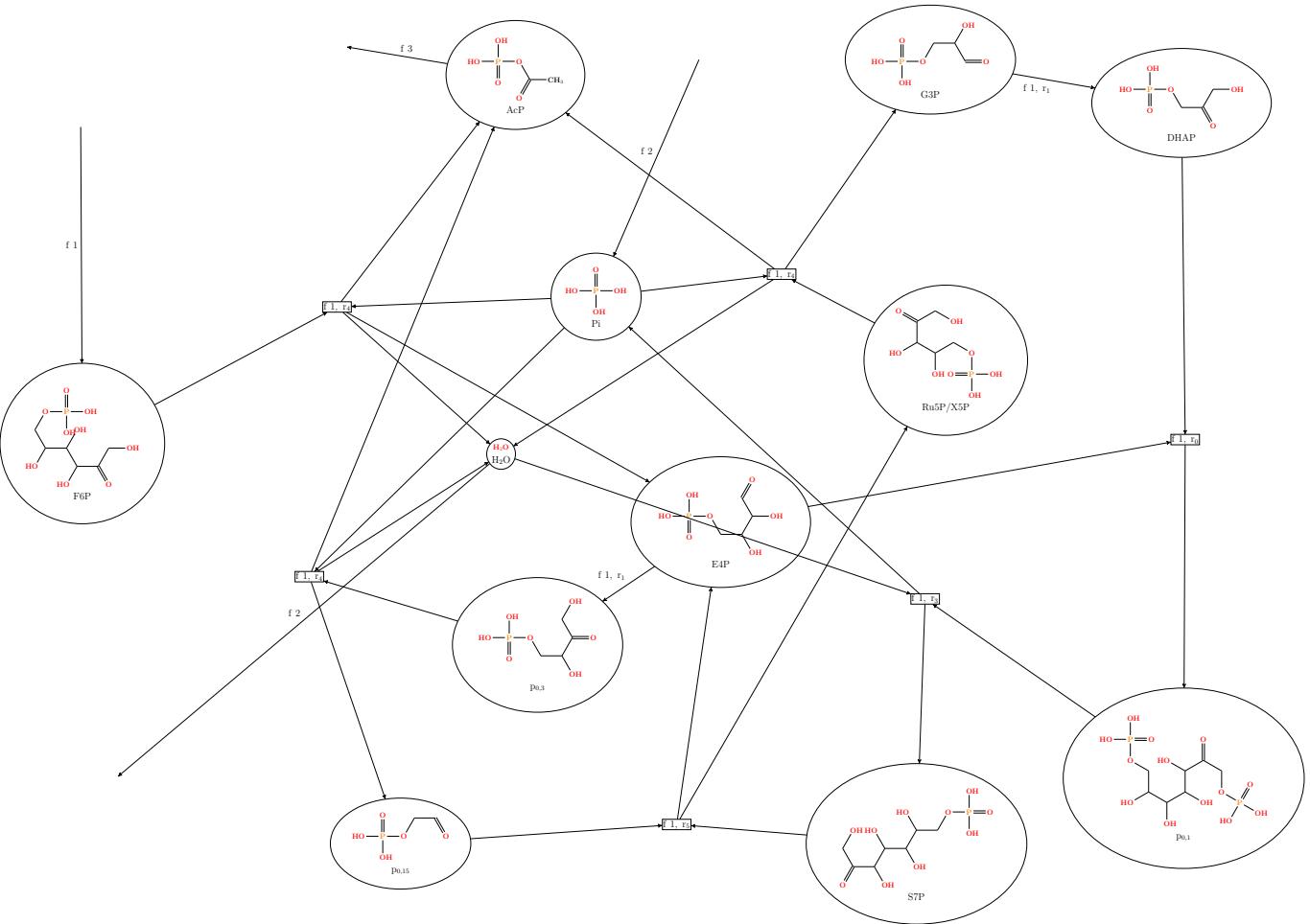
Overall Data

Objective value (integral): 8

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/354_dg_0_11100_f_0_13_filt

$$|E| = 8 \quad |P| = 8$$

0.12 Enumerated Flows with 9 unique reactions

0.13 Enumerated Flows with 10 unique reactions

0.14 Enumerated Flows with 11 unique reactions

0.15 Enumerated Flows with 9 reactions

0.16 Enumerated Flows with 7 unique reactions

0.16.1 Solution 36

Overall Data

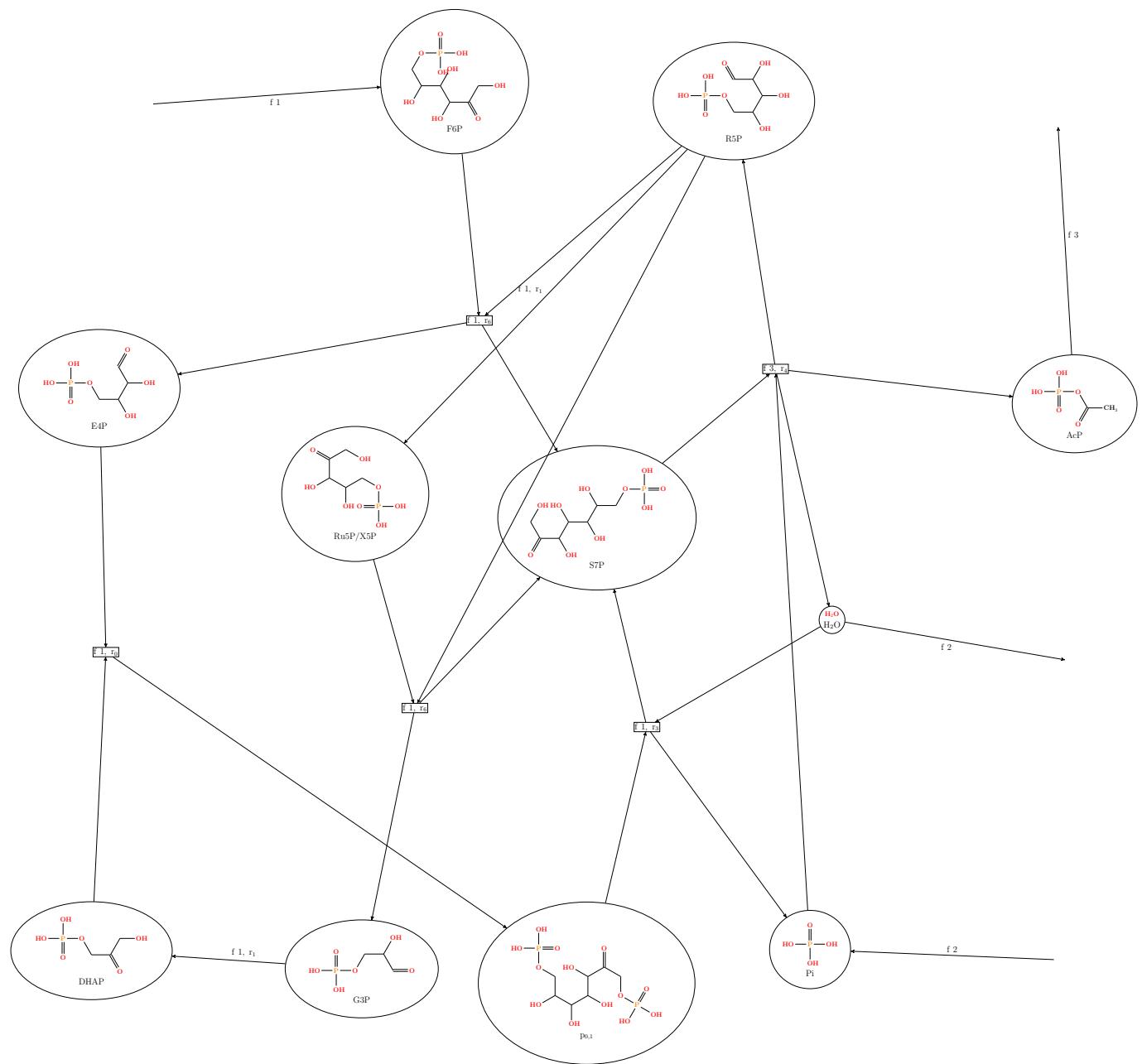
Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0

H_20	0	2
Pi	2	0

Filtered Graph



File: out/359_dg_0_11100_f_0_36_filt

$|E| = 7 \quad |P| = 9$

0.16.2 Solution 82

Overall Data

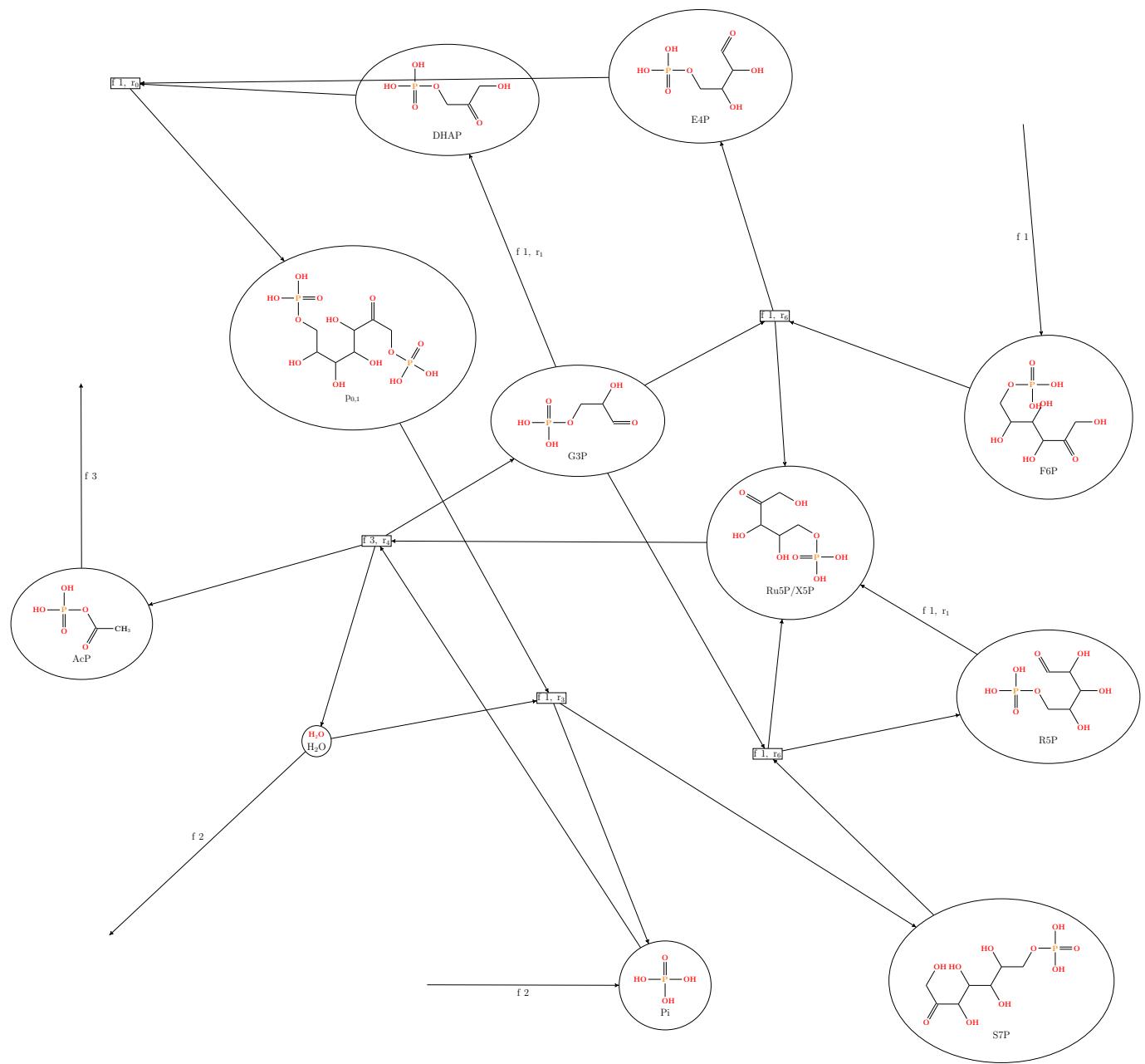
Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0

H_20	0	2
Pi	2	0

Filtered Graph



File: out/364_dg_0_11100_f_0_82_filt

|E| = 7 |P| = 9

0.16.3 Solution 97

Overall Data

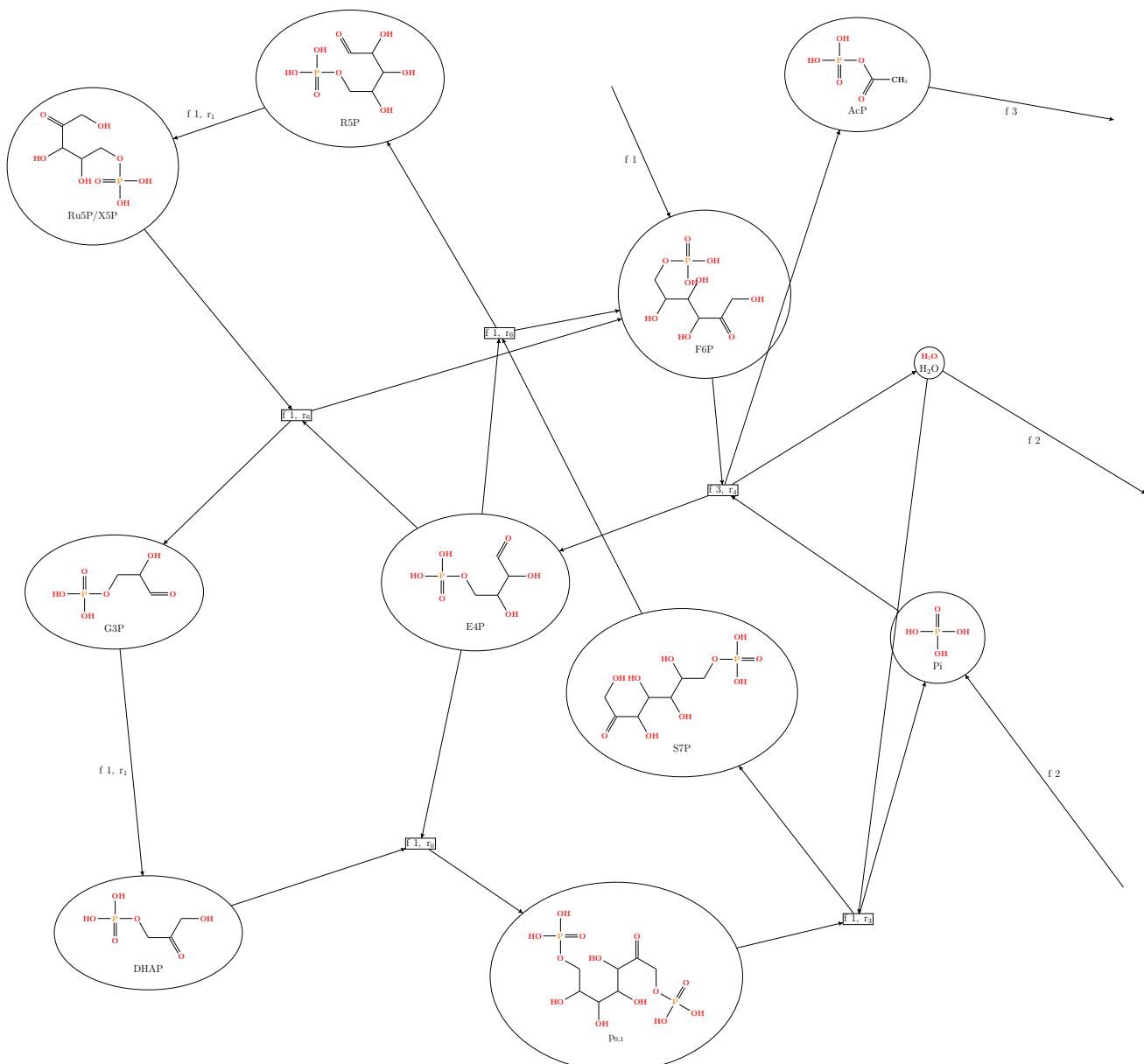
Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0

H_20	0	2
Pi	2	0

Filtered Graph



File: out/369_dg_0_11100_f_0_97_filt

$|E| = 7$ $|P| = 9$

0.17 Enumerated Flows with 8 unique reactions

0.17.1 Solution 15

Overall Data

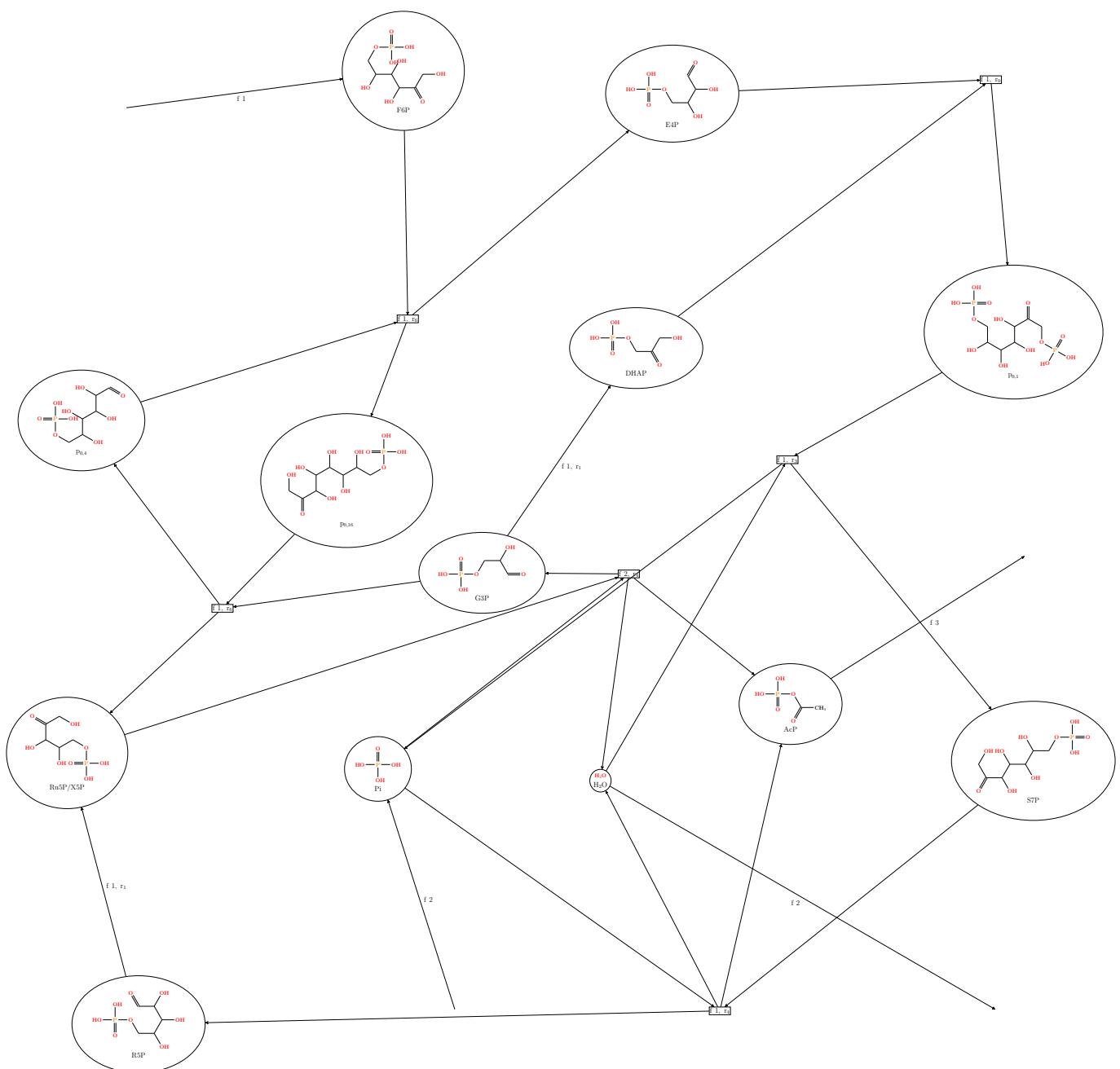
Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
-----	---	---

F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/374_dg_0_11100_f_0_15_filt

$$|E| = 8 \quad |P| = 9$$

0.17.2 Solution 17

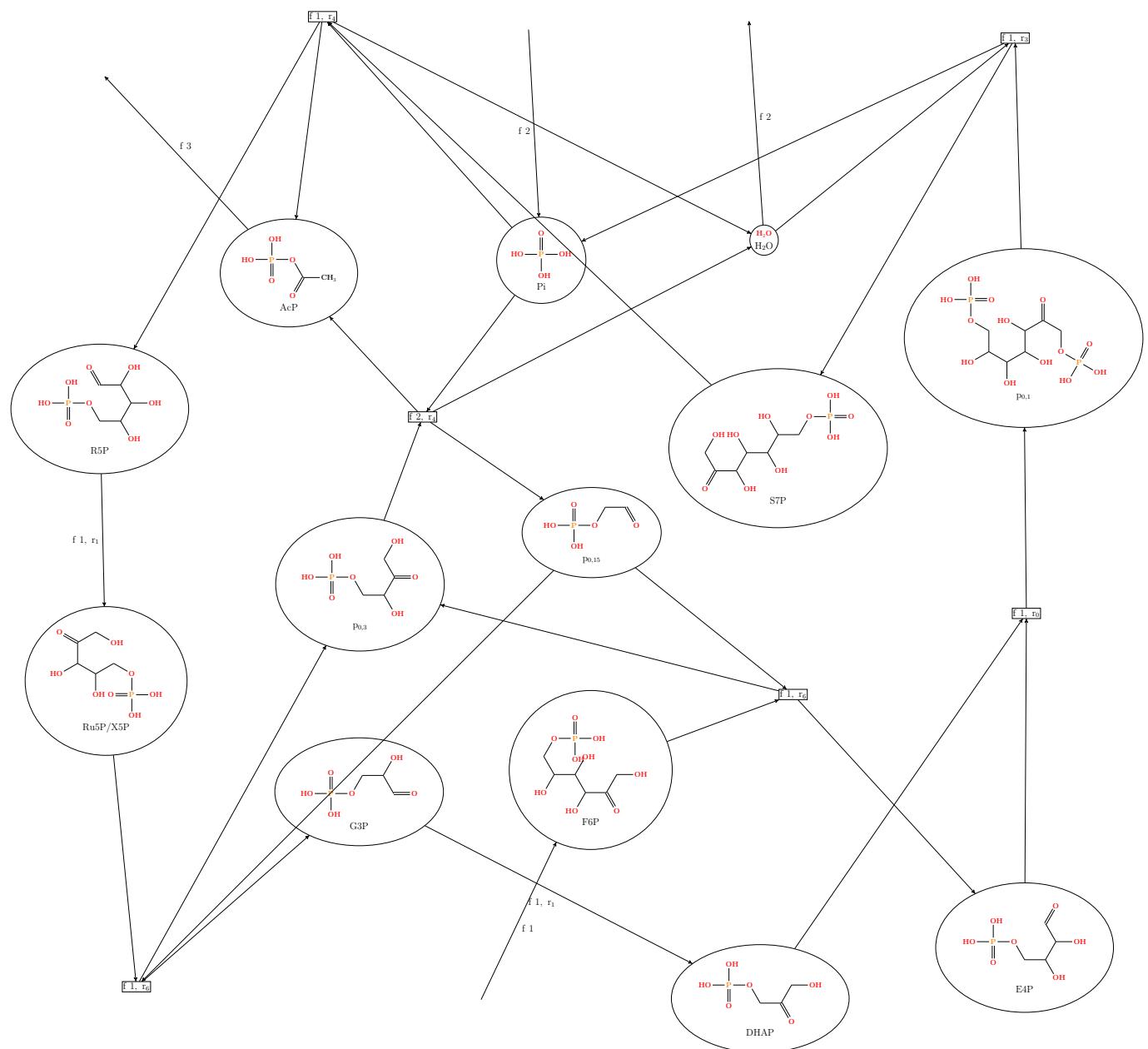
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



$$|E|=8, |B|=0$$

0.17.2 Solution 18

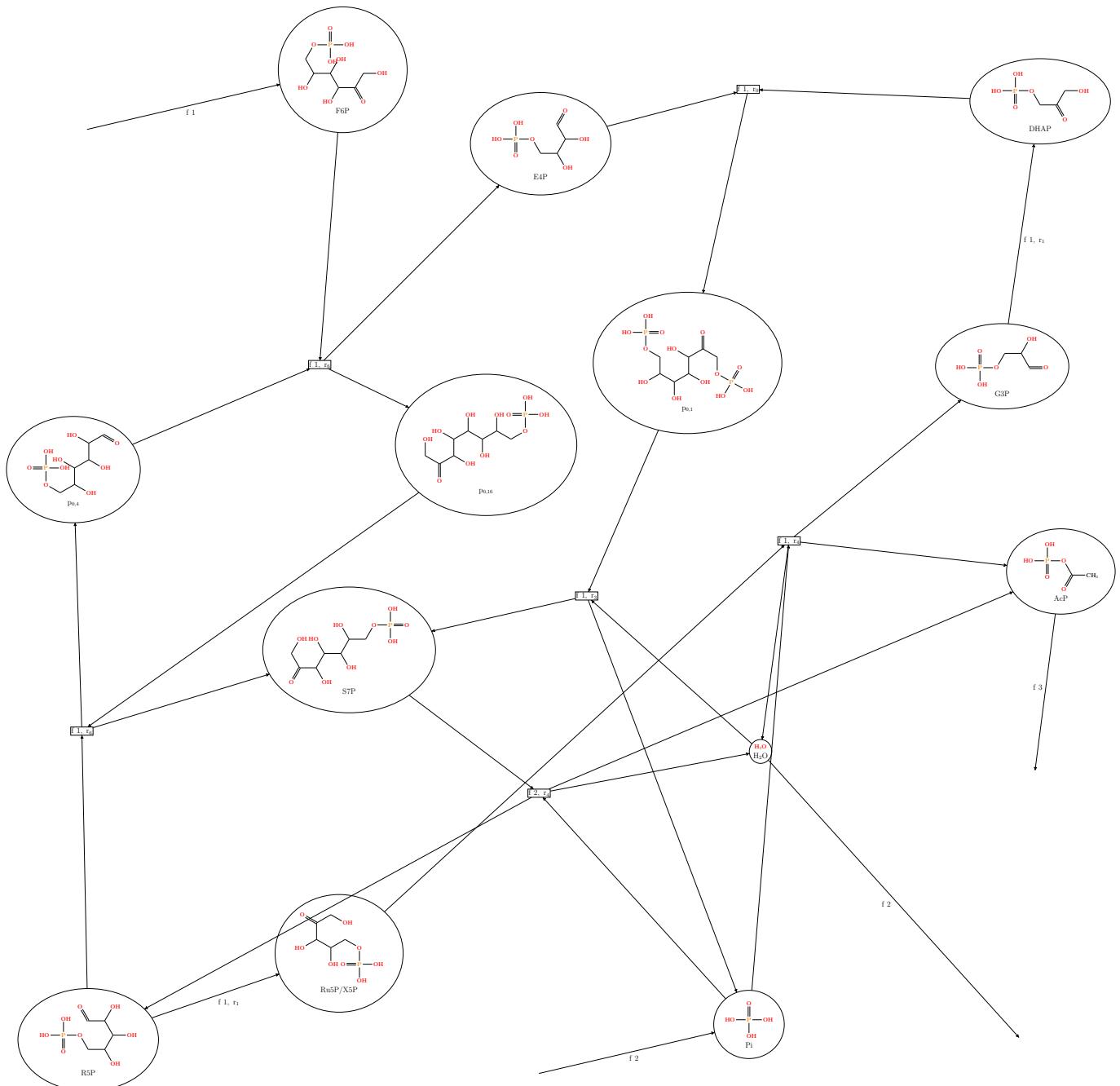
Overall Data

Objective value (integral): 9

Objective value (in
Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/384_dg_0_11100_f_0_18_filt

$$|E| = 8 \quad |P| = 9$$

0.17.4 Solution 19

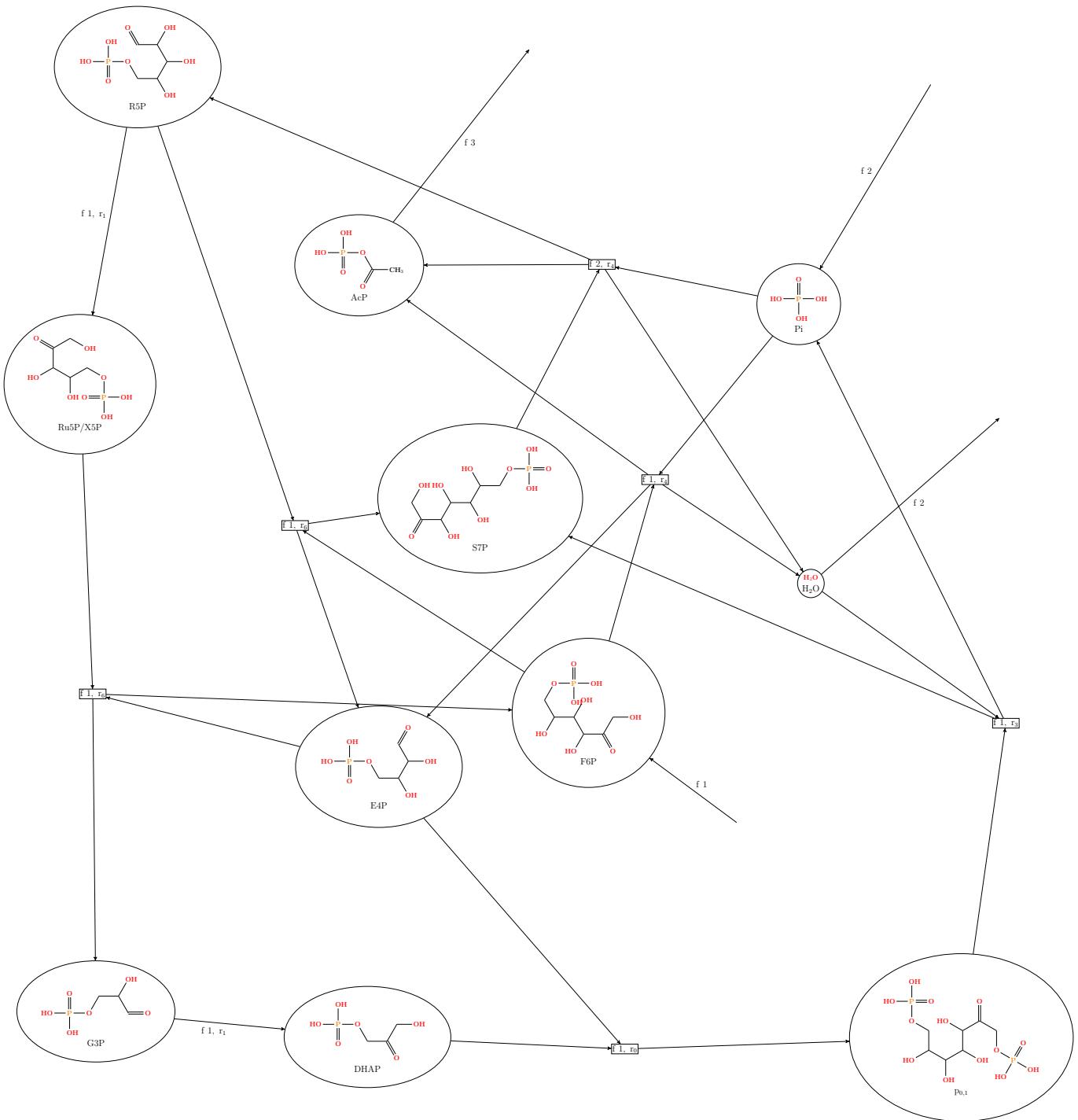
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/389_dg_0_11100_f_0_19_filt

$$|E| = 8 \quad |P| = 9$$

0.17.5 Solution 21

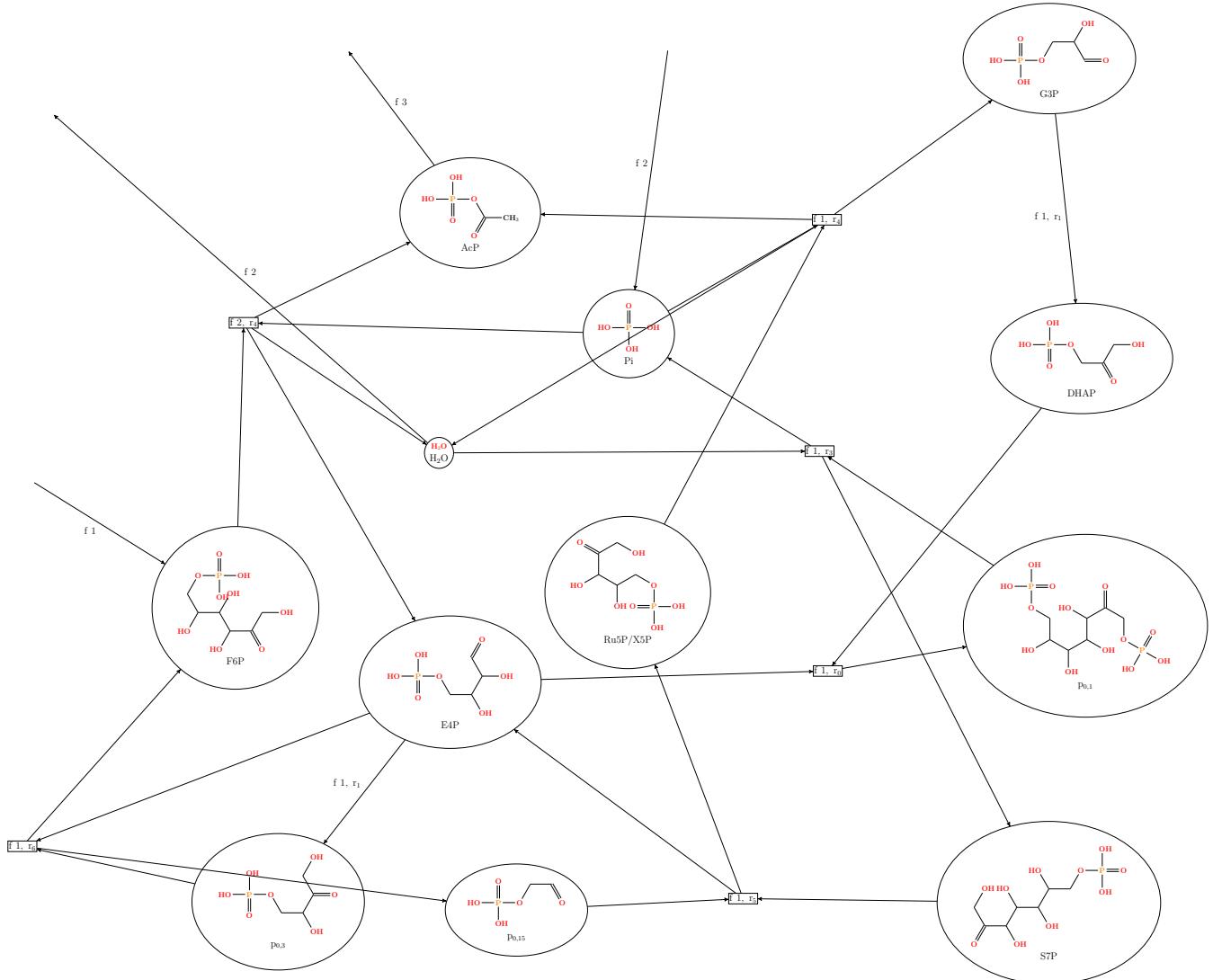
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/394_dg_0_11100_f_0_21_filt

$$|E| = 8 \quad |P| = 9$$

0.17.6 Solution 22

Overall Data

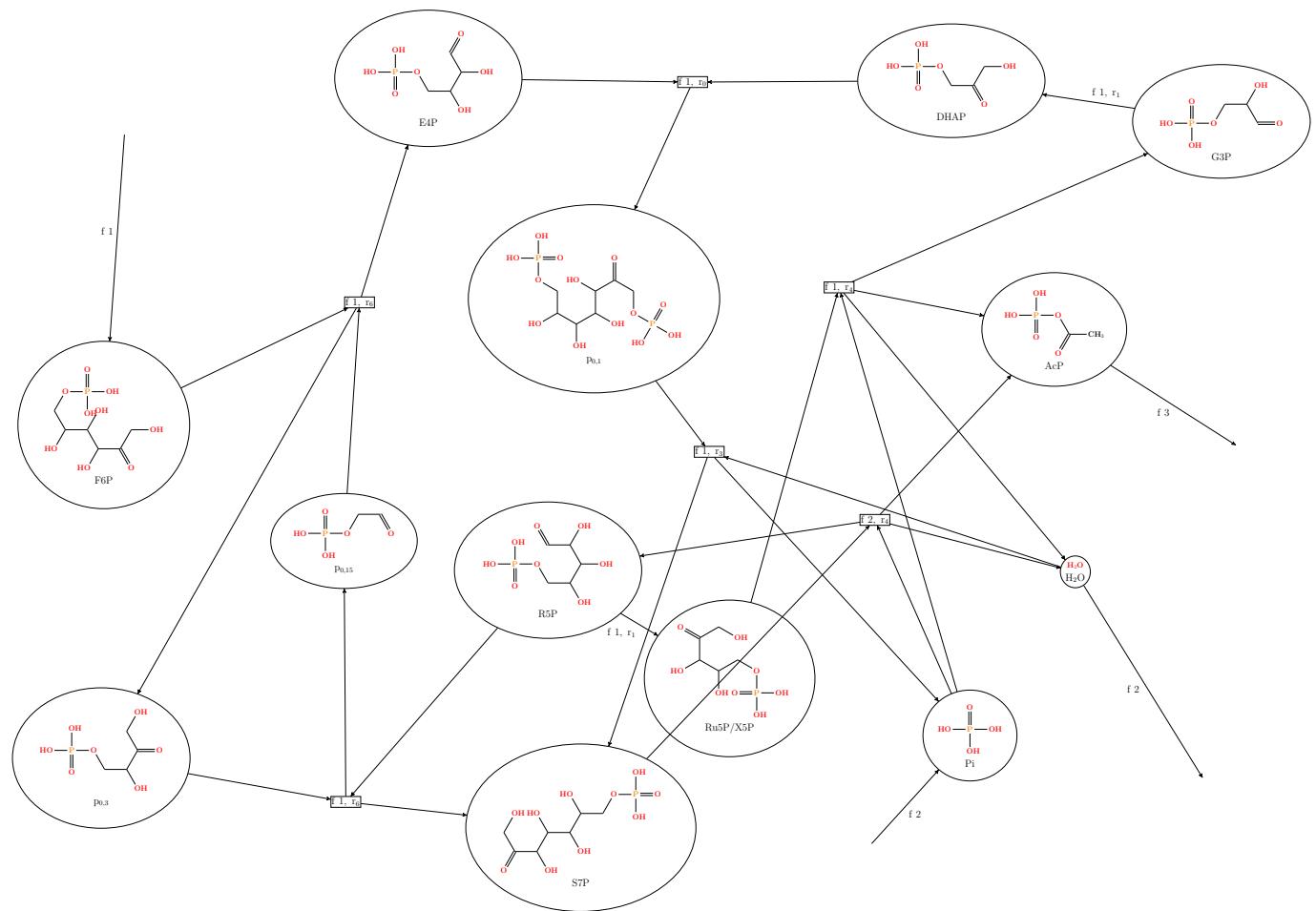
Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
-----	---	---

F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/399_dg_0_11100_f_0_22_filt

$$|E| = 8 \quad |P| = 9$$

0.17.7 Solution 23

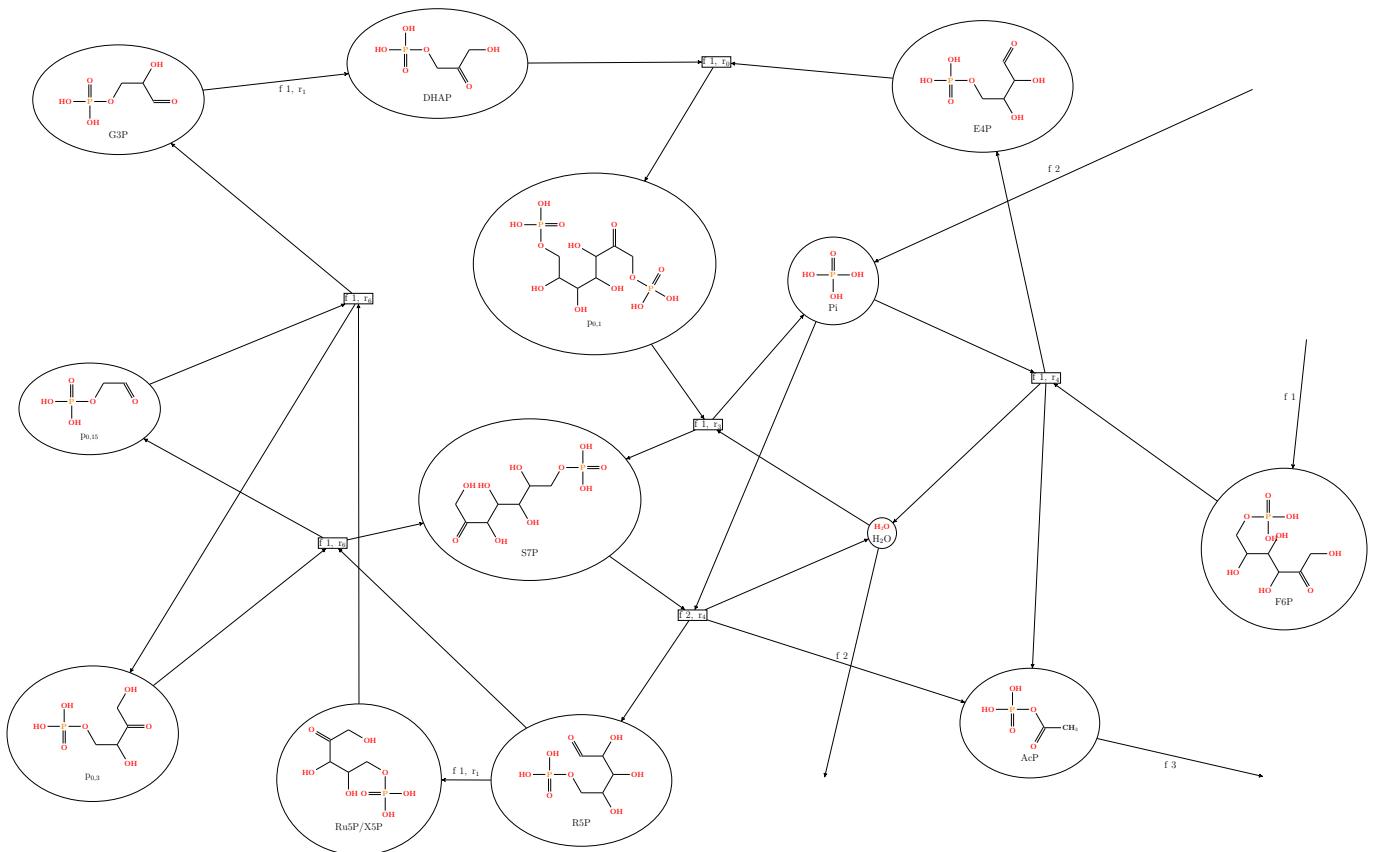
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/404_dg_0_11100_f_0_23_filt

$$|E| = 8 \quad |P| = 9$$

0.17.8 Solution 24

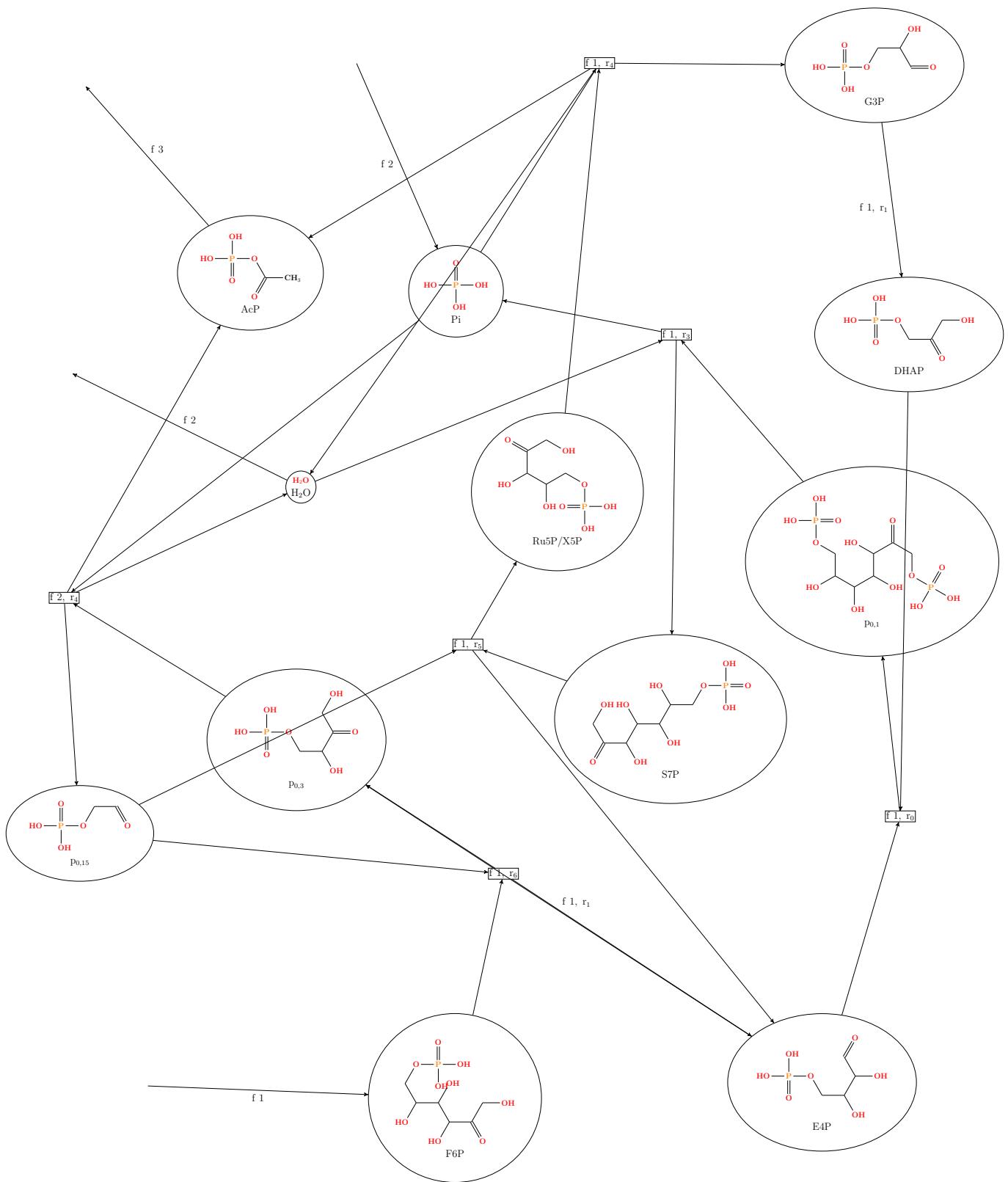
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/409_dg_0_11100_f_0_24_filt

$$|E| = 8 \quad |P| = 9$$

0.17.9 Solution 25

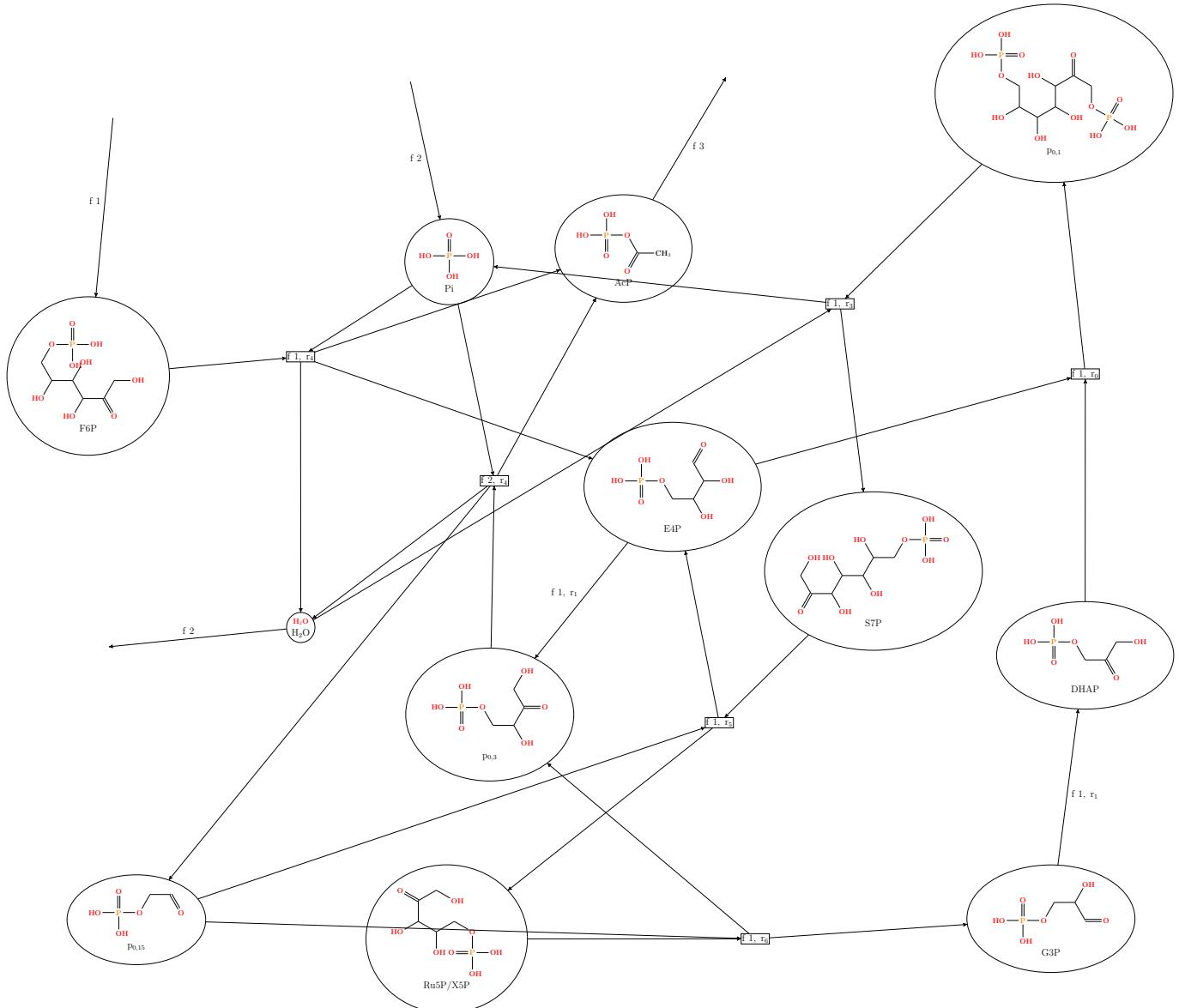
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/414_dg_0_11100_f_0_25_filt

|E| = 8 |P| = 9

0.17.10 Solution 28

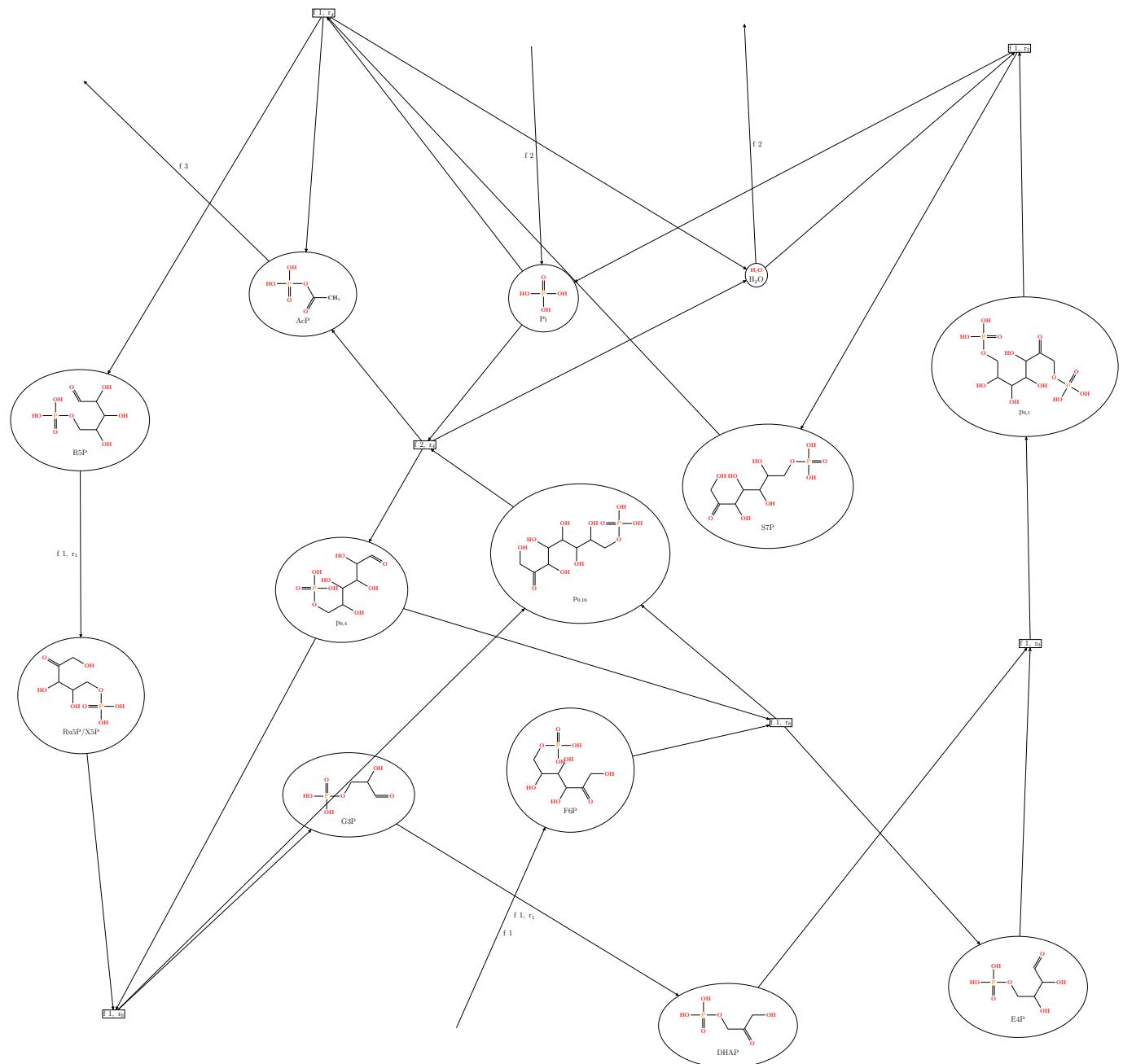
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/419_dg_0_11100_f_0_28_filt

|E| = 8 |P| = 9

0.17.11 Solution 29

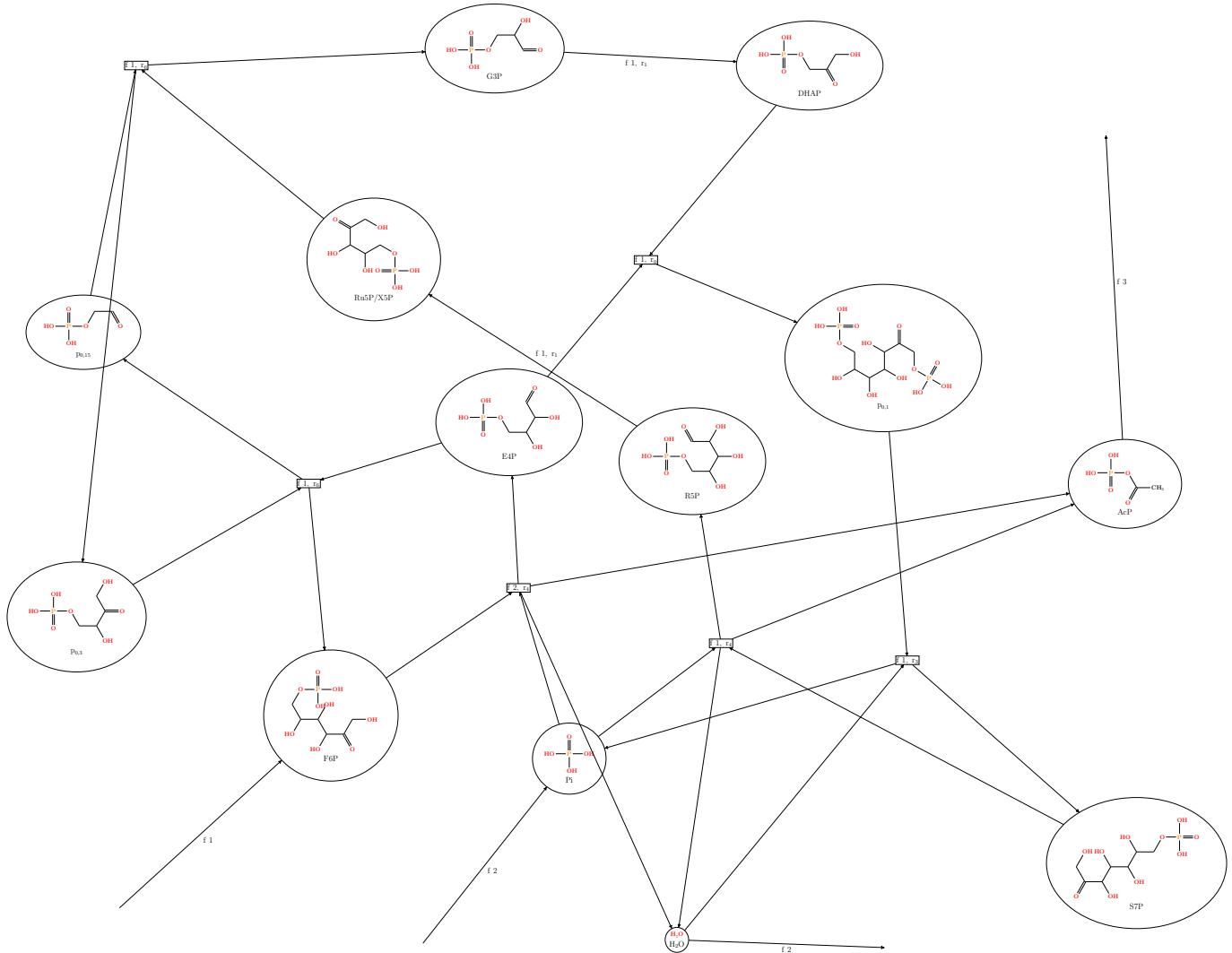
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/424_dg_0_11100_f_0_29_filt

$$|E| = 8 \quad |P| = 9$$

0.17.12 Solution 32

Overall Data

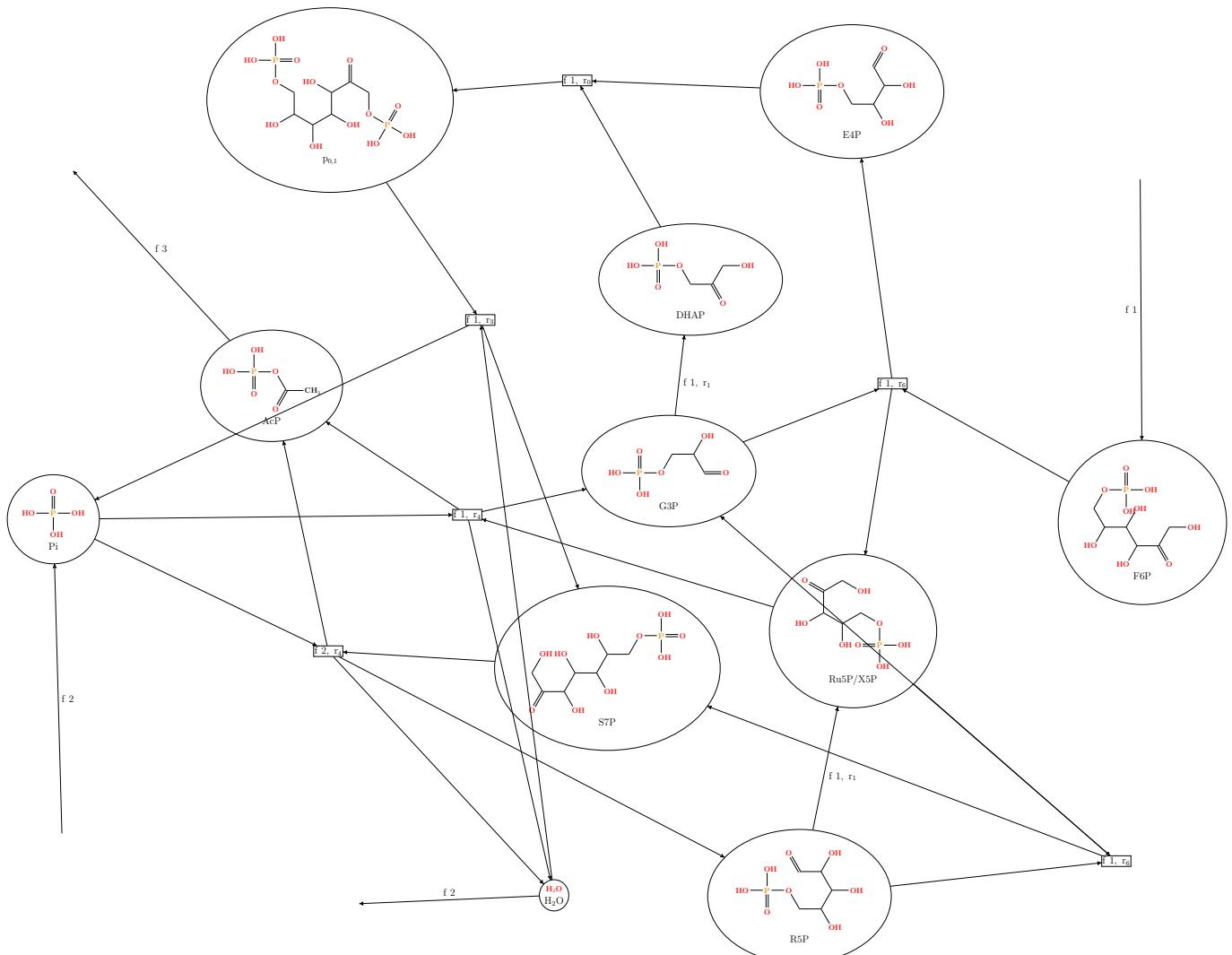
Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
-----	---	---

F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/429_dg_0_11100_f_0_32_filt

$$|E| = 8 \quad |P| = 9$$

0.17.13 Solution 33

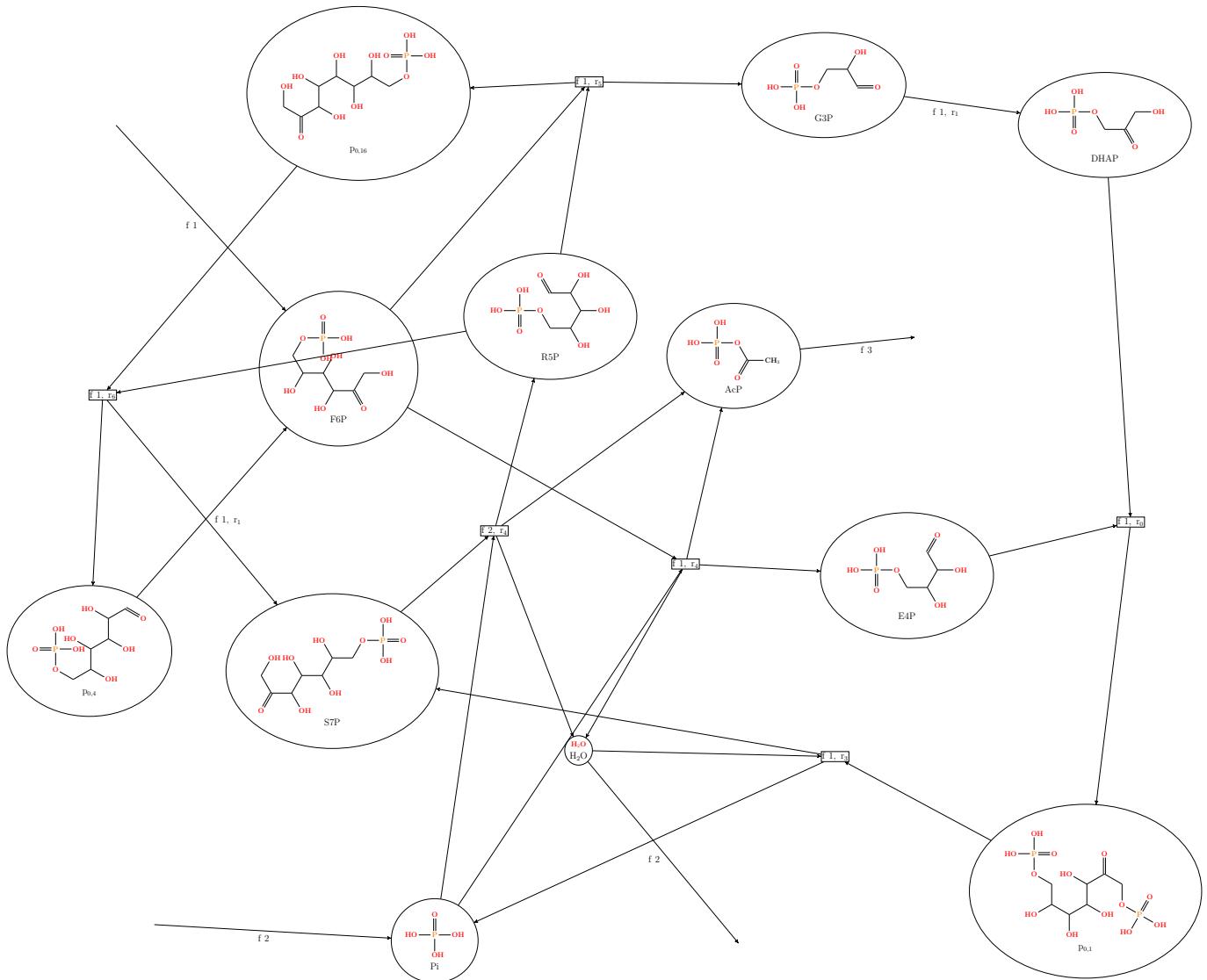
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/434_dg_0_11100_f_0_33_filt

$$|E| = 8 \quad |P| = 9$$

0.17.14 Solution 34

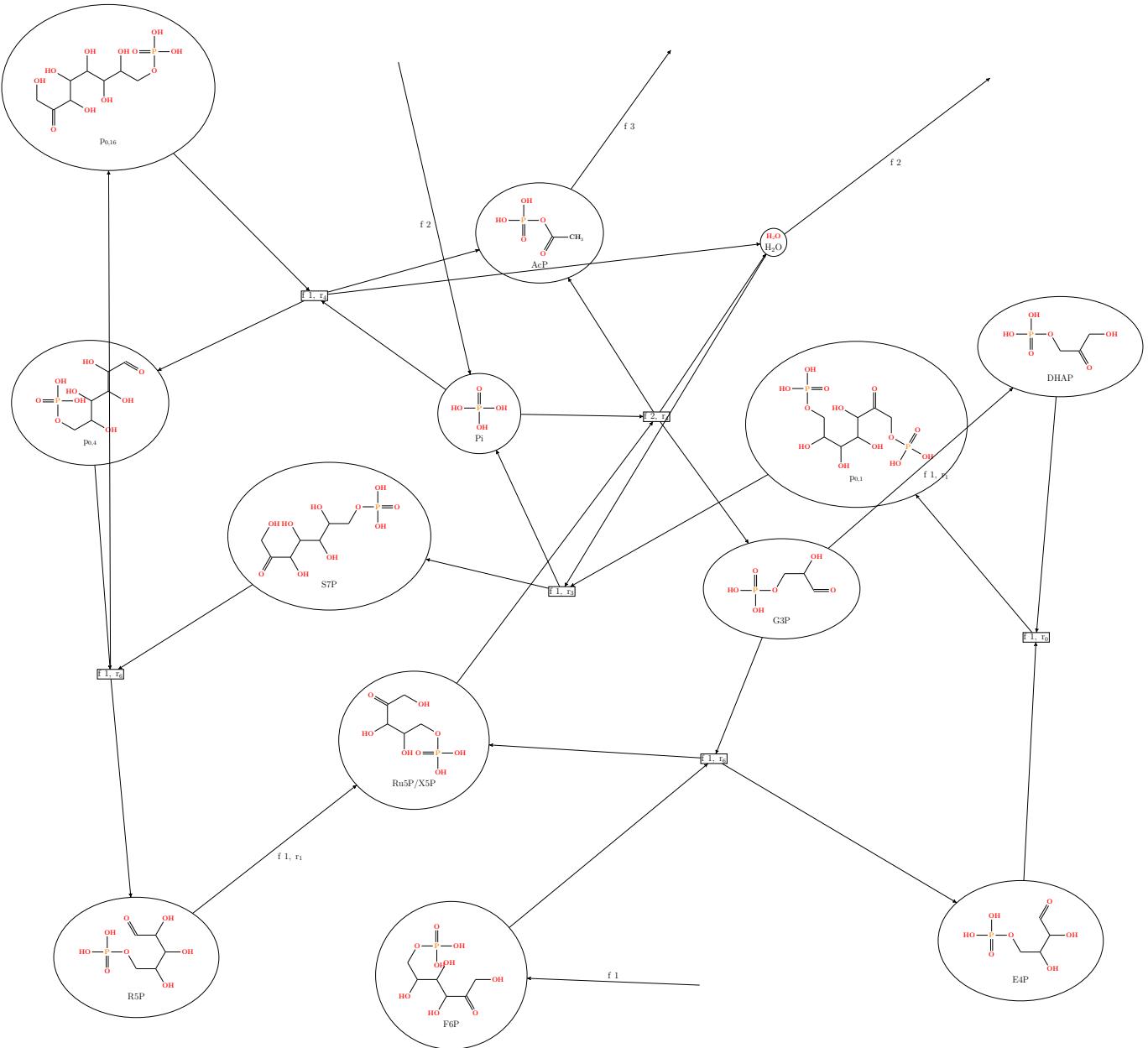
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/439_dg_0_11100_f_0_34_filt

$$|E| = 8 \quad |P| = 9$$

0.17.15 Solution 35

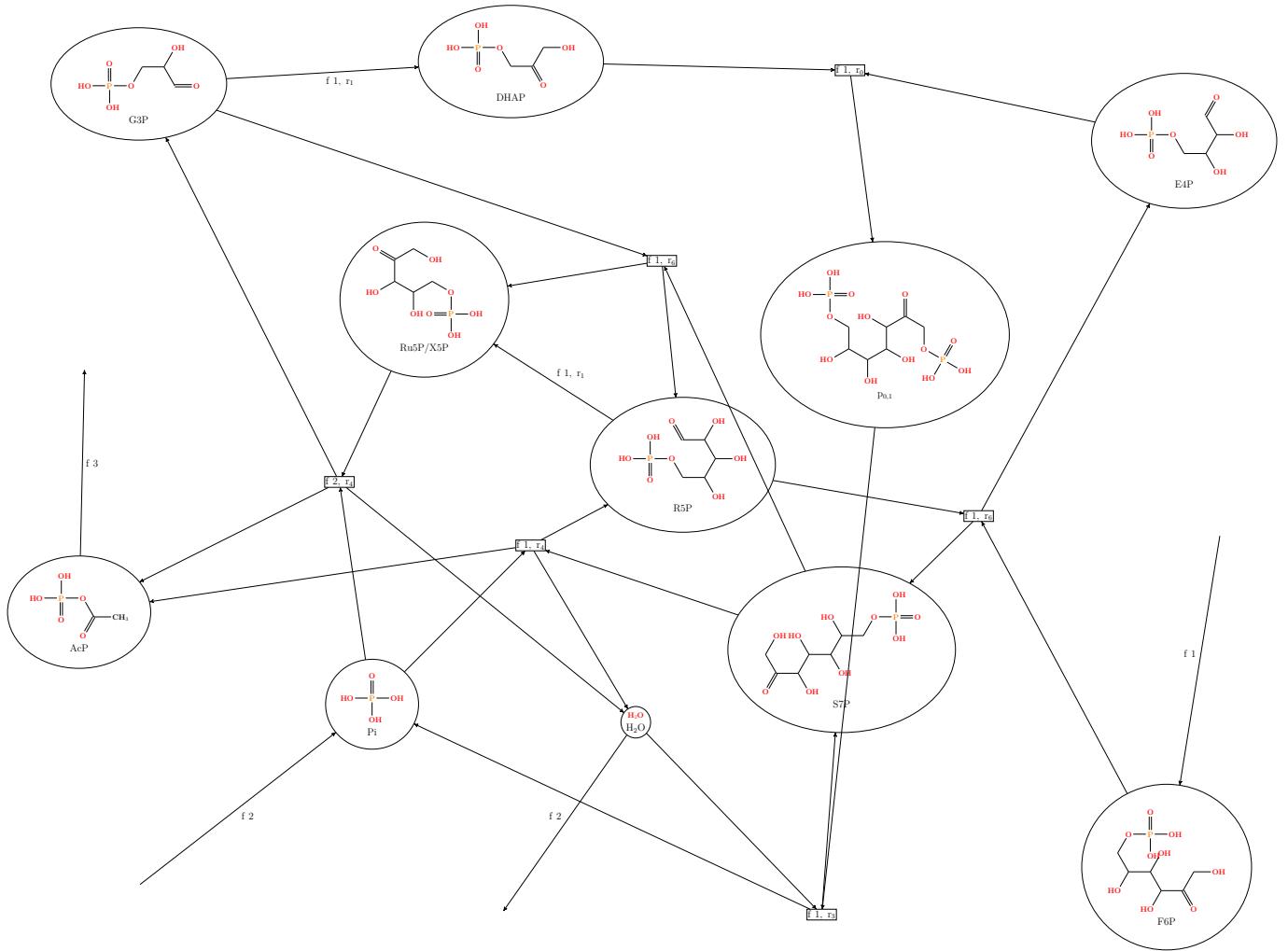
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/444_dg_0_11100_f_0_35_filt

$$|E| = 8 \quad |P| = 9$$

0.17.16 Solution 37

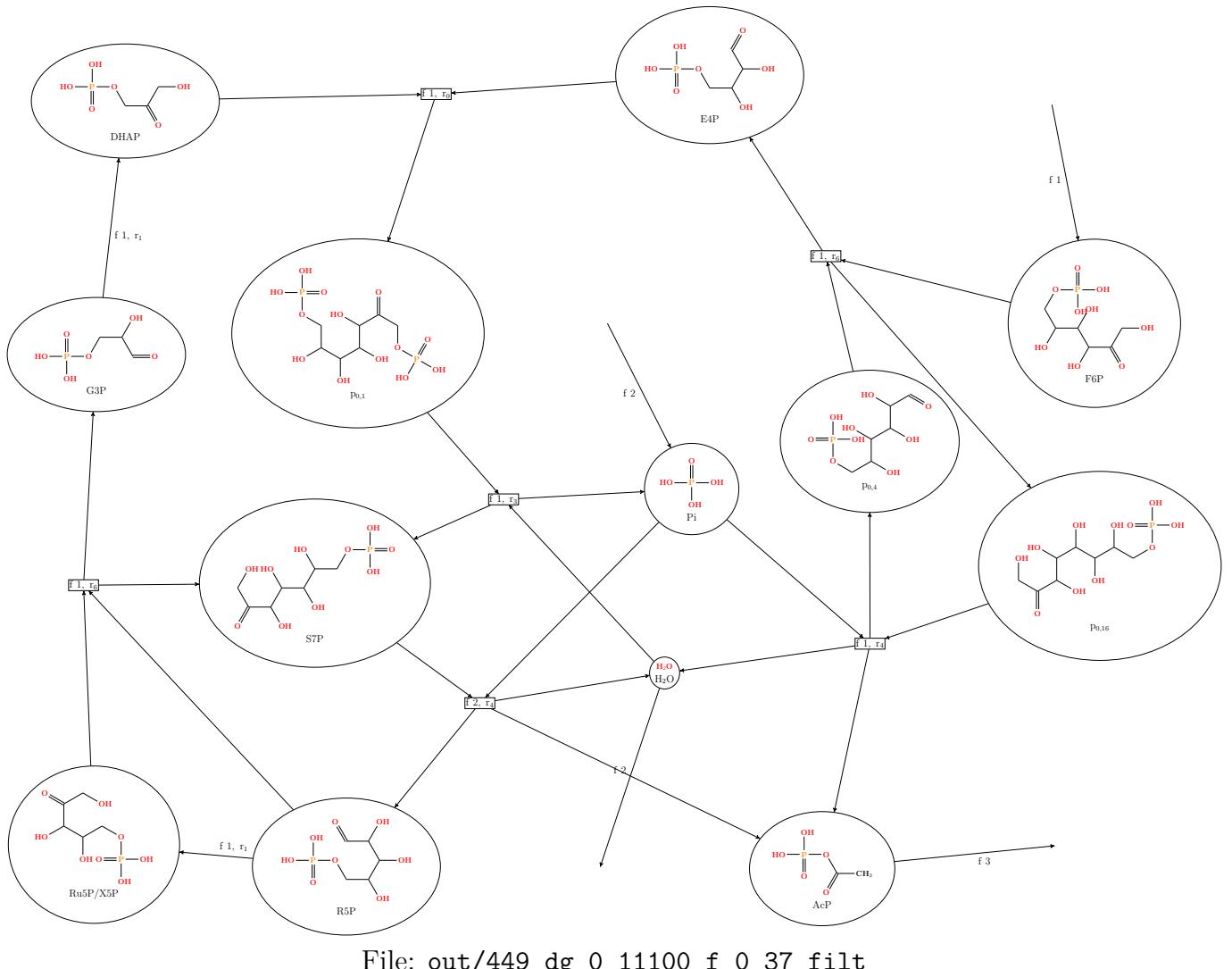
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/449_dg_0_11100_f_0_37_filt

$$|E| = 8 \quad |P| = 9$$

0.17.17 Solution 38

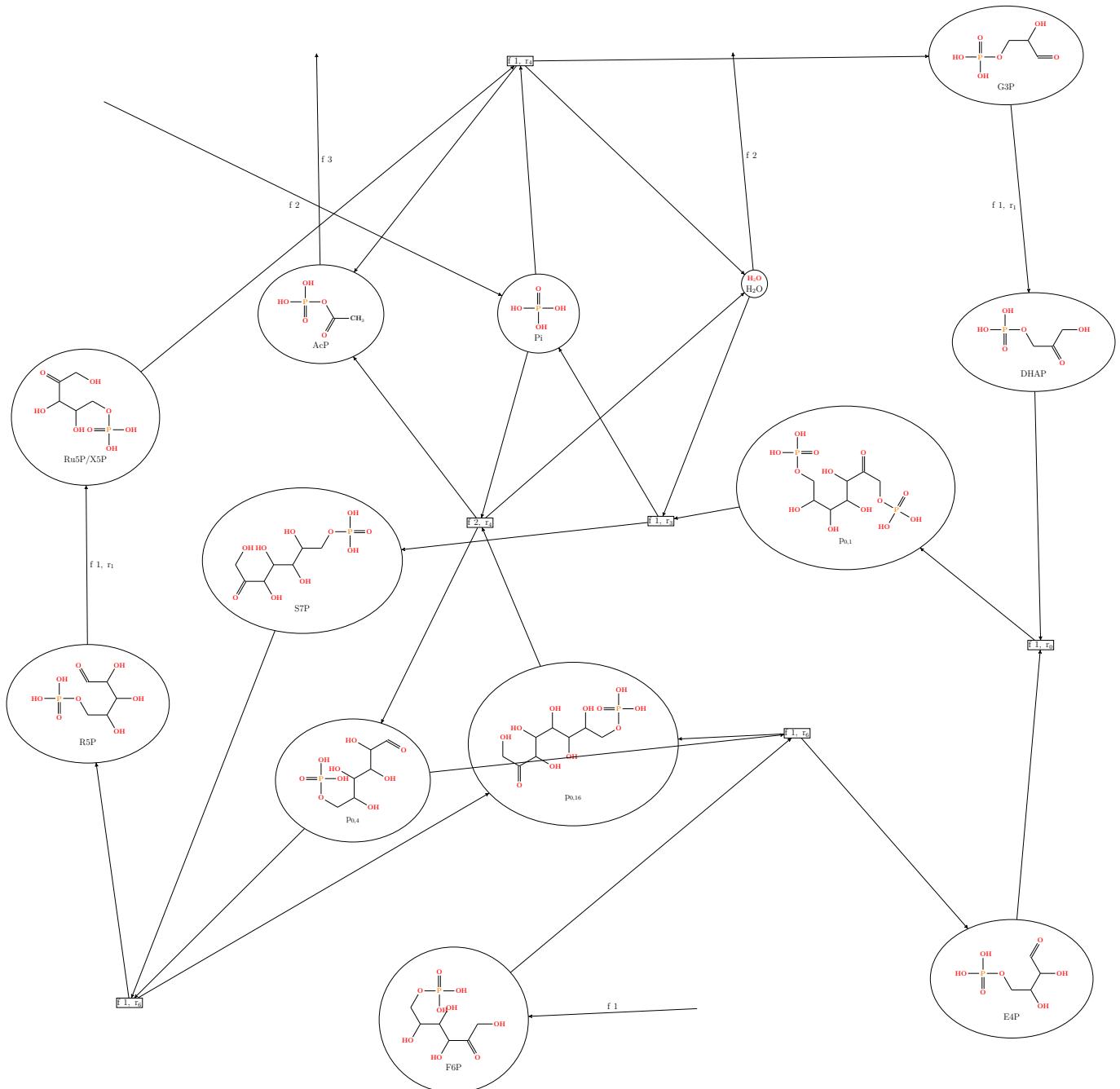
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/454_dg_0_11100_f_0_38_filt

$$|E| = 8 \quad |P| = 9$$

0.17.18 Solution 40

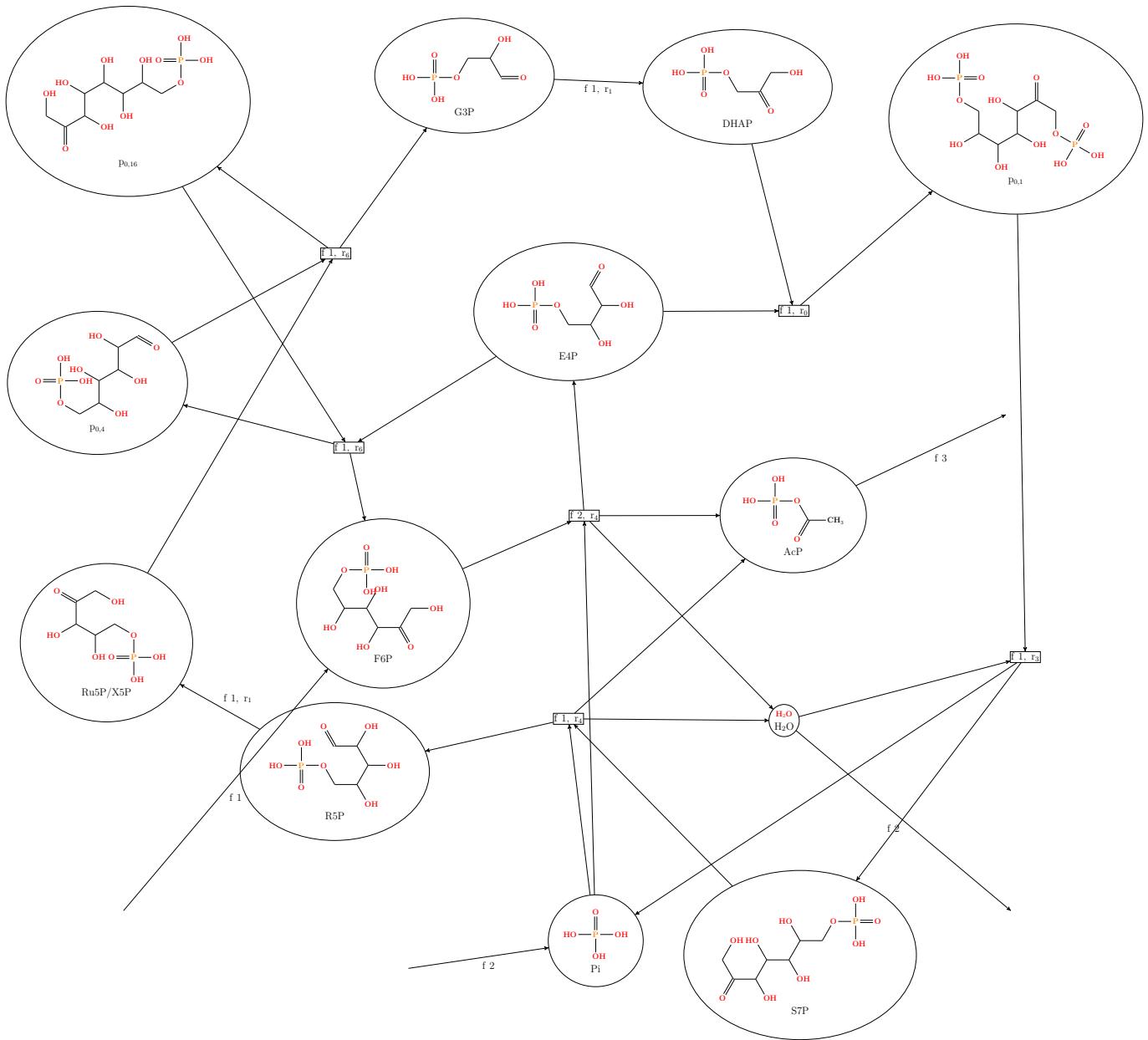
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/459_dg_0_11100_f_0_40_filt

$$|E| = 8 \quad |P| = 9$$

0.17.19 Solution 41

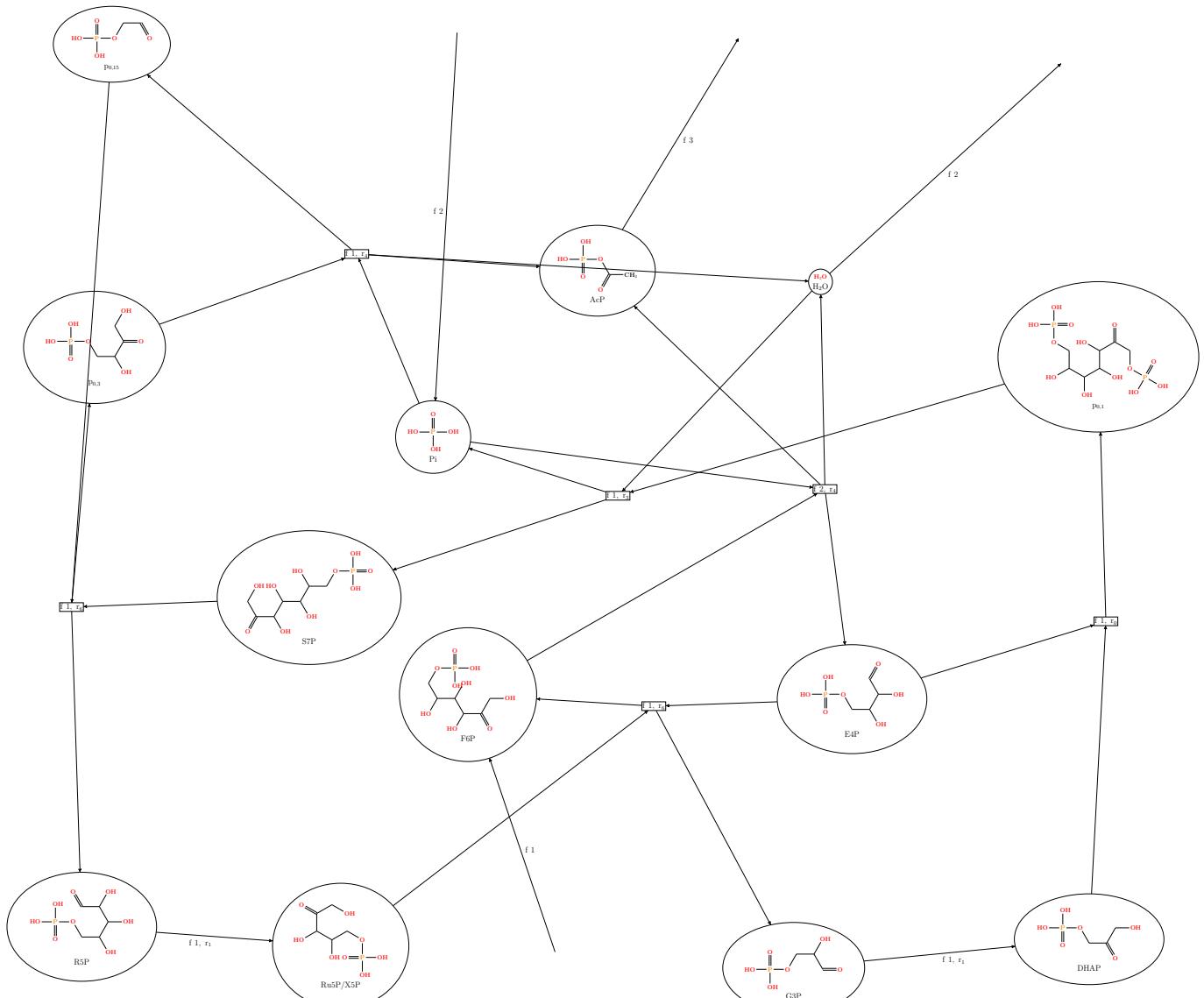
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/464_dg_0_11100_f_0_41_filt

$$|E| = 8 \quad |P| = 9$$

0.17.20 Solution 47

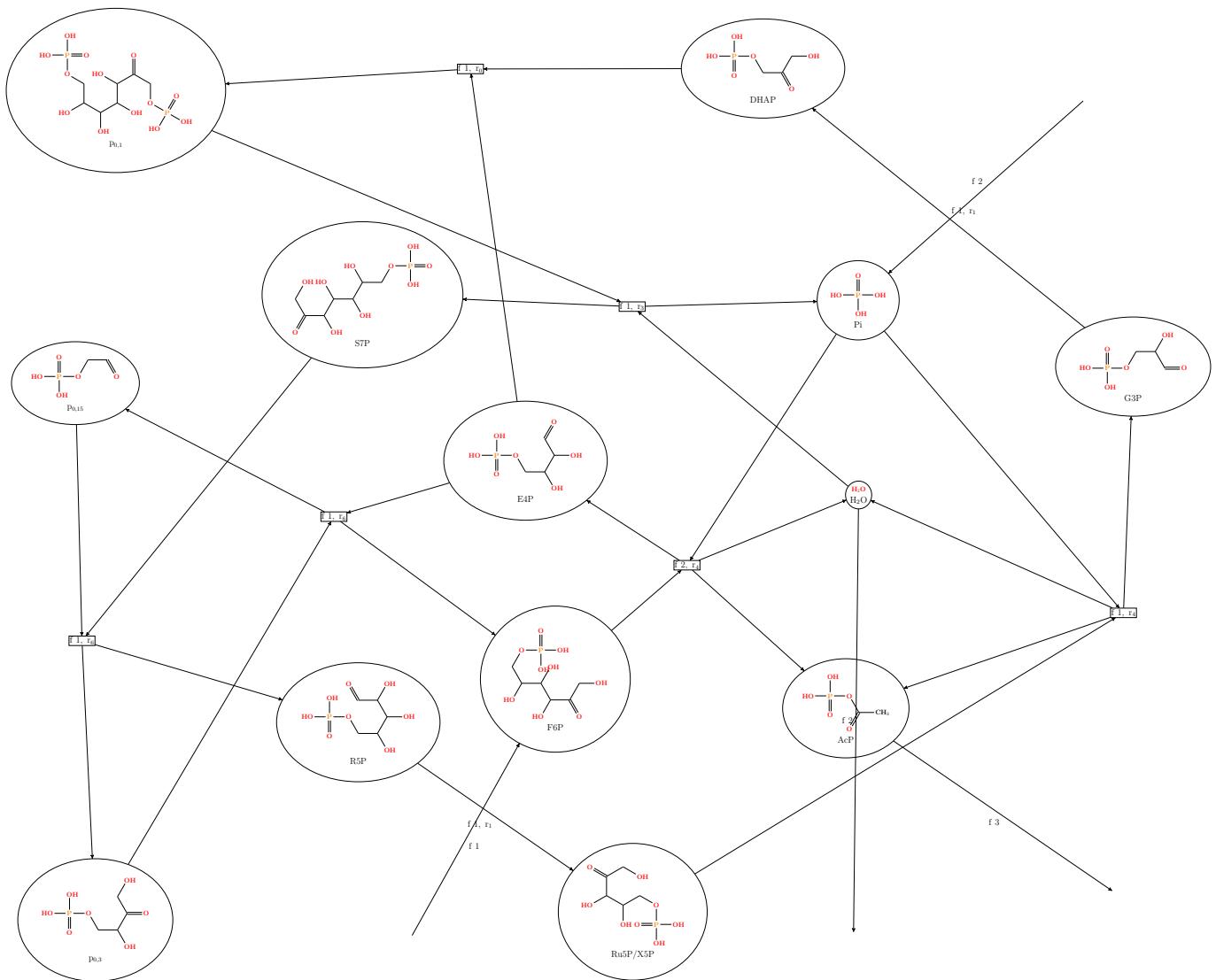
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/469_dg_0_11100_f_0_47_filt

$$|E| = 8 \quad |P| = 9$$

0.17.21 Solution 49

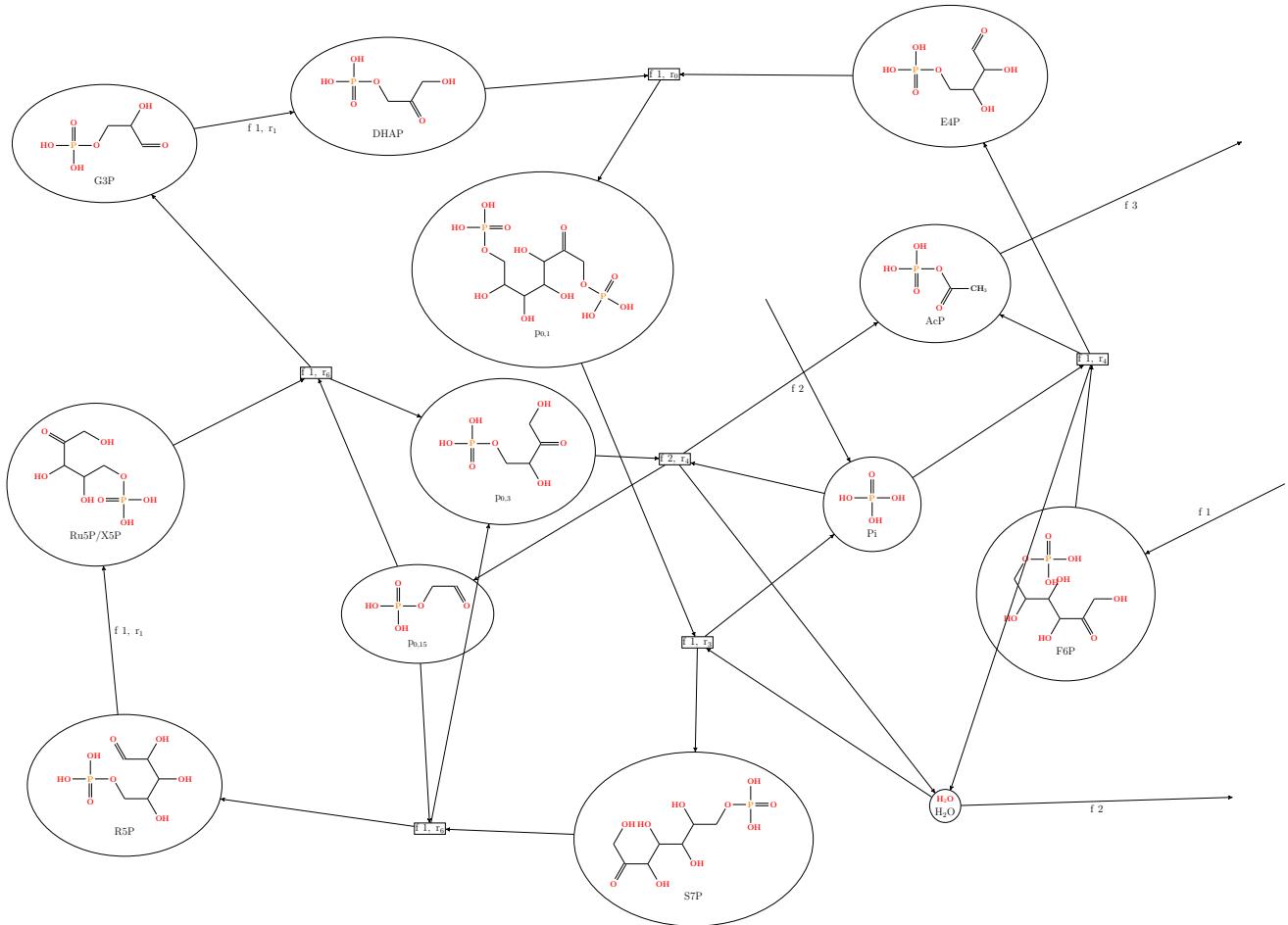
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/474_dg_0_11100_f_0_49_filt

$$|E| = 8 \quad |P| = 9$$

0.17.22 Solution 54

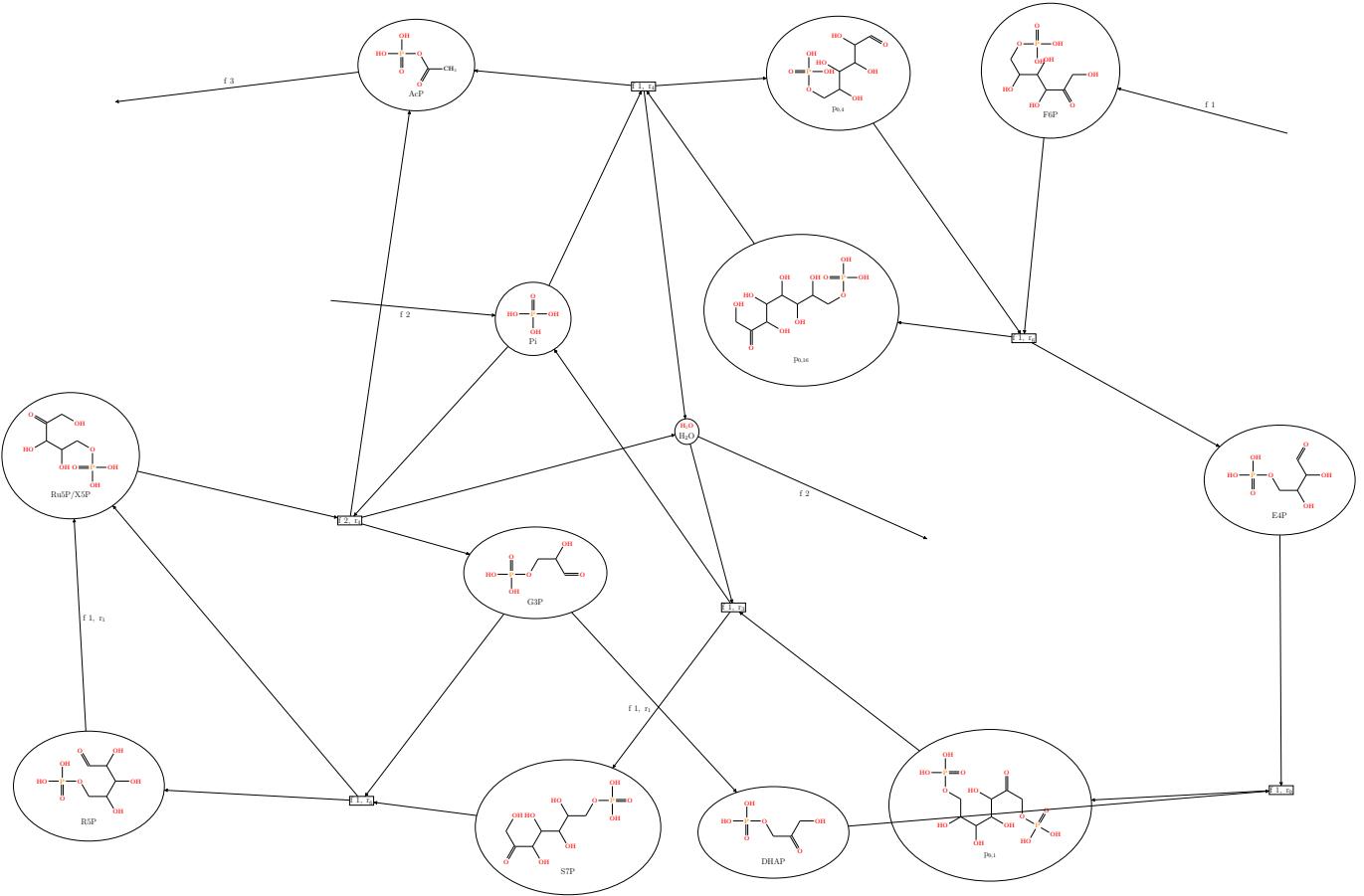
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/479_dg_0_11100_f_0_54_filt

$$|E| = 8 \quad |P| = 9$$

0.17.23 Solution 56

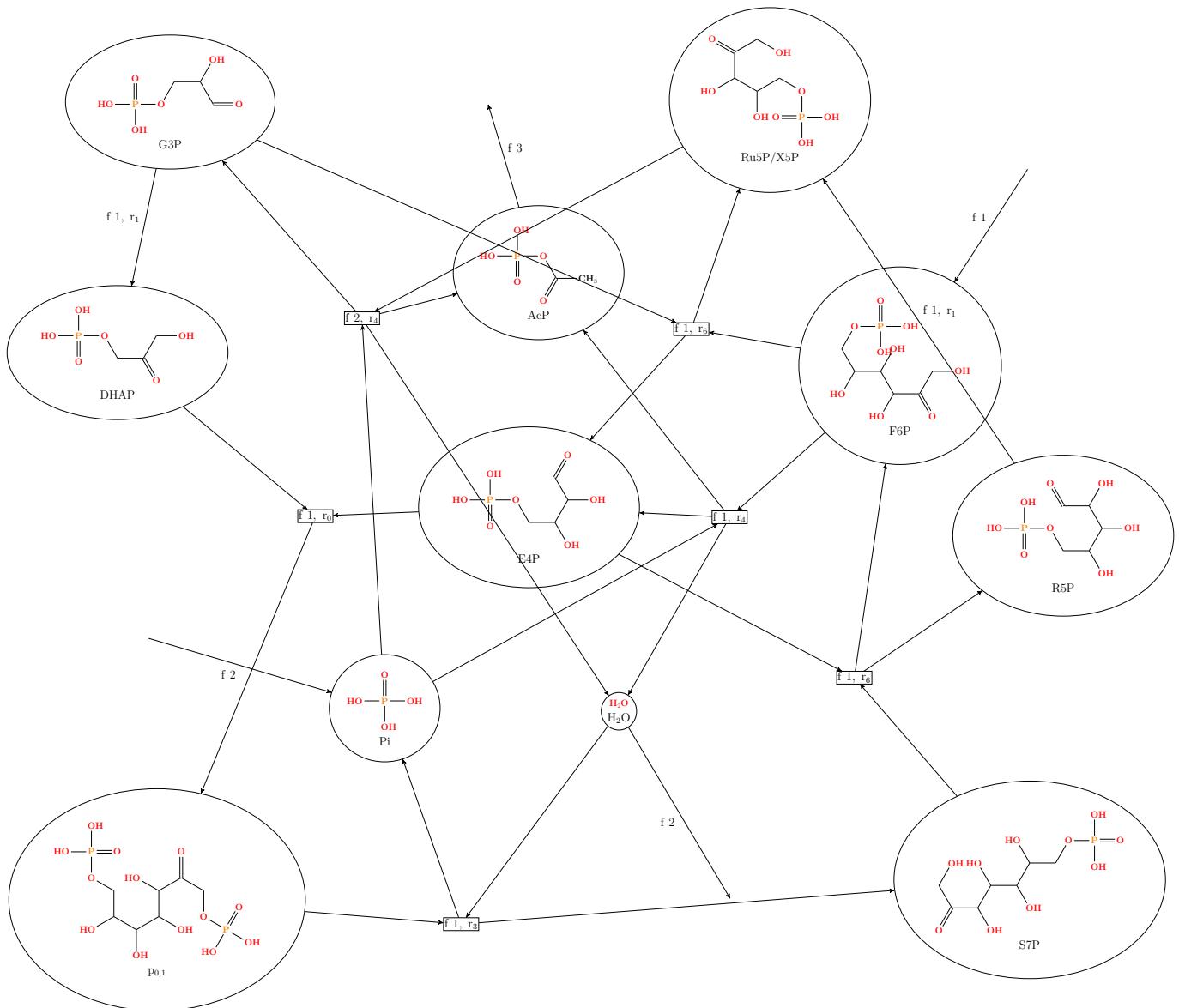
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/484_dg_0_11100_f_0_56_filt

$$|E| = 8 \quad |P| = 9$$

0.17.24 Solution 58

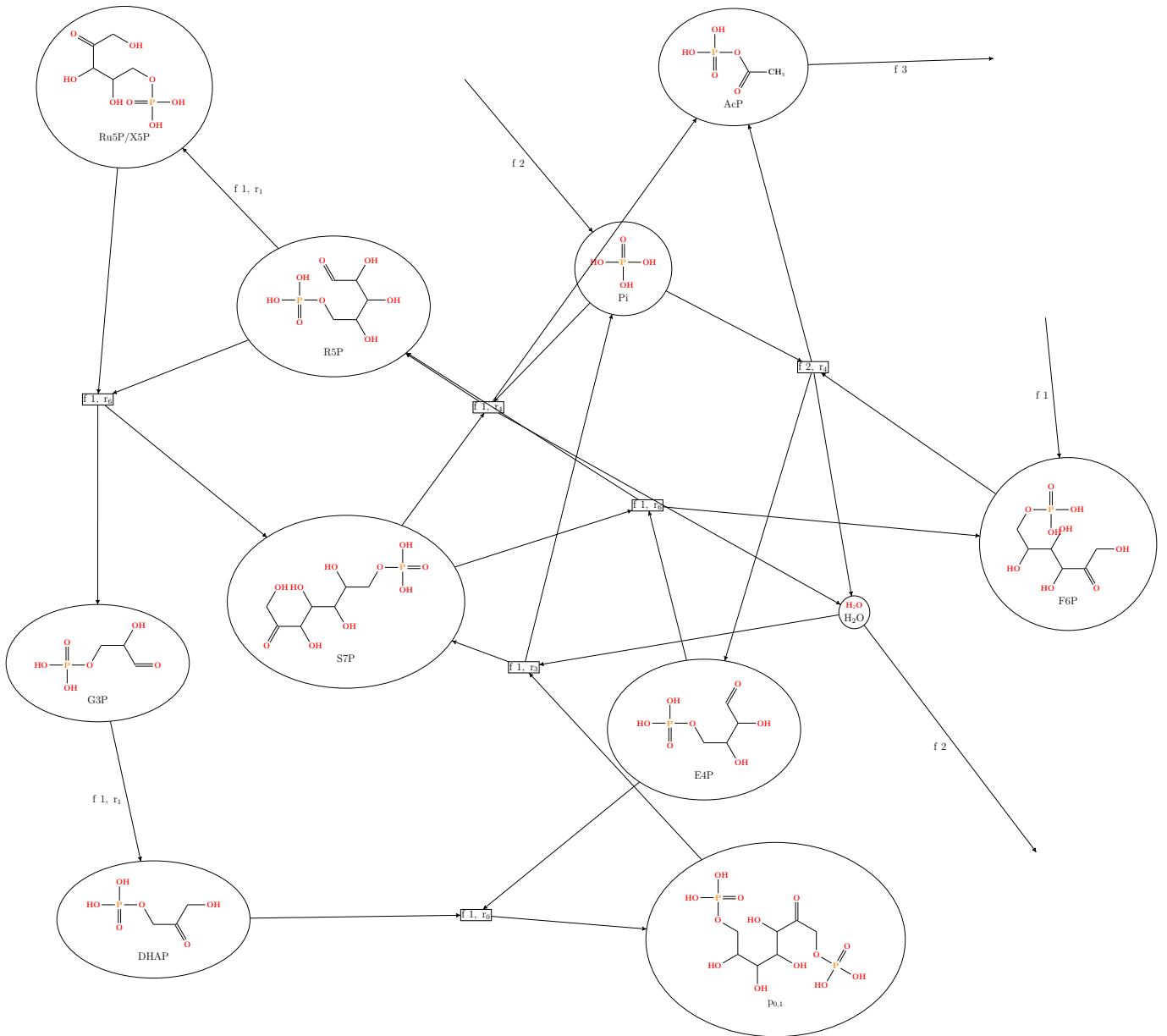
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/489_dg_0_11100_f_0_58_filt

$$|E| = 8 \quad |P| = 9$$

0.17.25 Solution 59

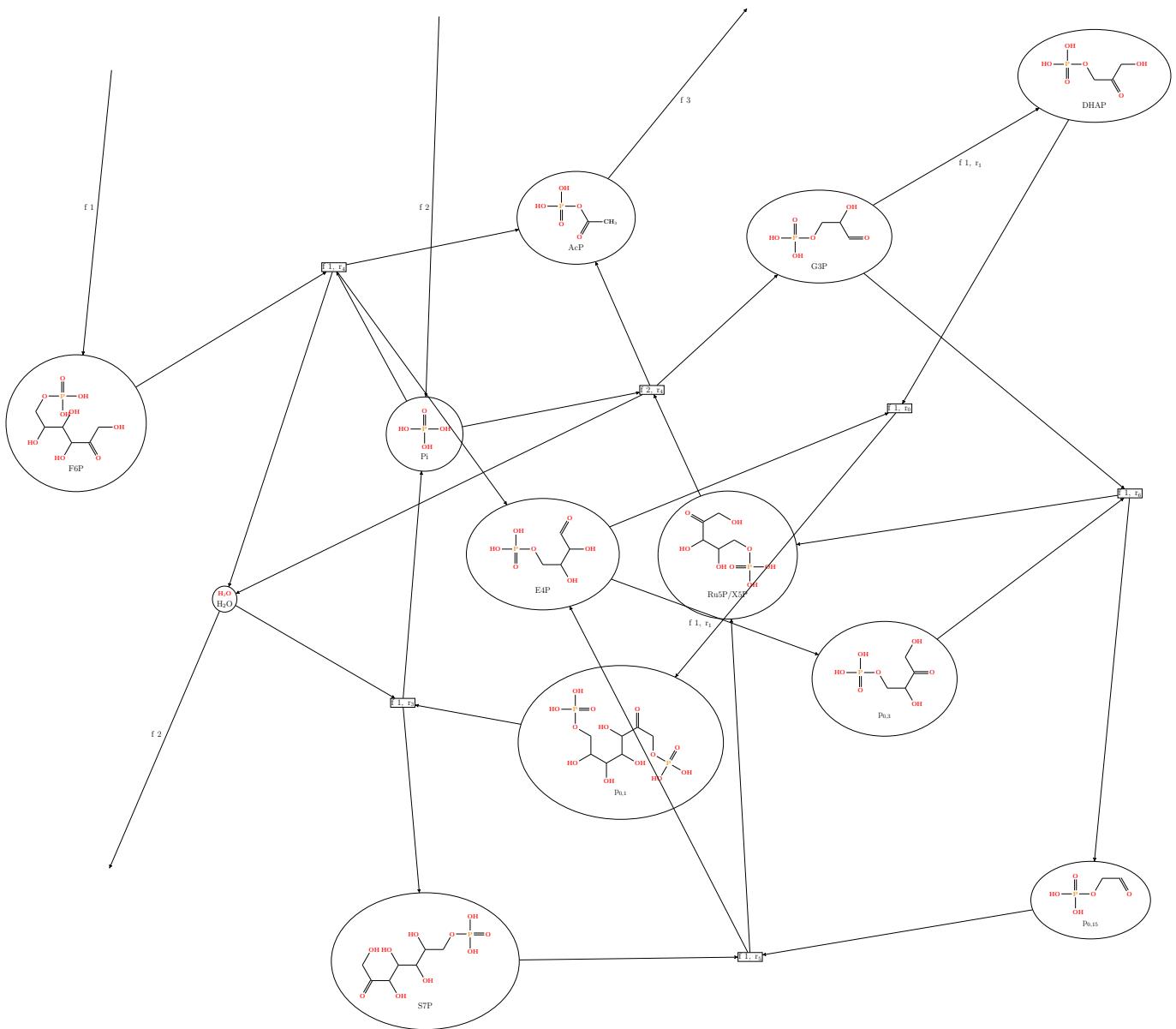
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/494_dg_0_11100_f_0_59_filt

$$|E| = 8 \quad |P| = 9$$

0.17.26 Solution 64

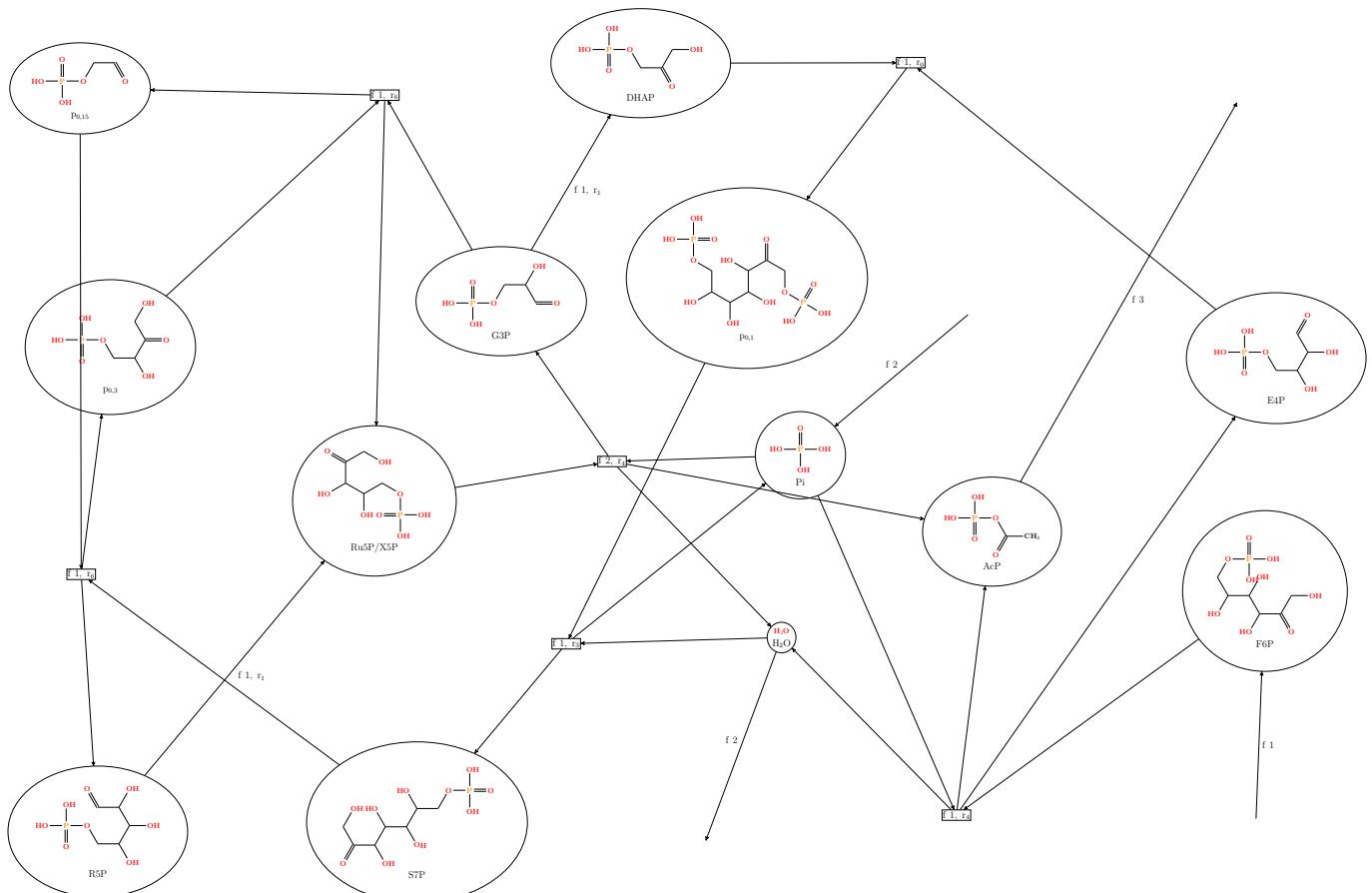
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/499_dg_0_11100_f_0_64_filt

$$|E| = 8 \quad |P| = 9$$

0.17.27 Solution 66

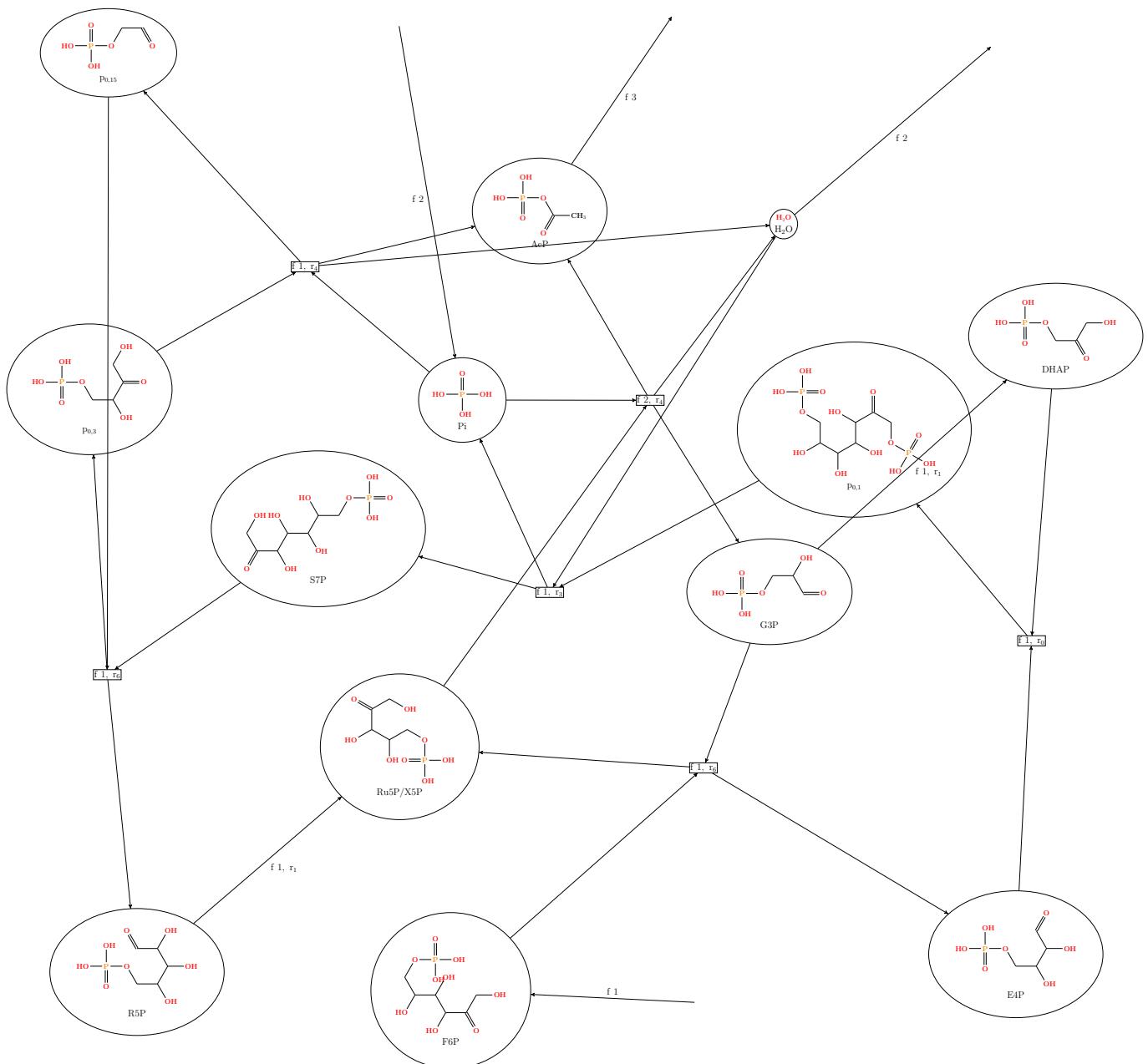
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/504_dg_0_11100_f_0_66_filt

$$|E| = 8 \quad |P| = 9$$

0.17.28 Solution 67

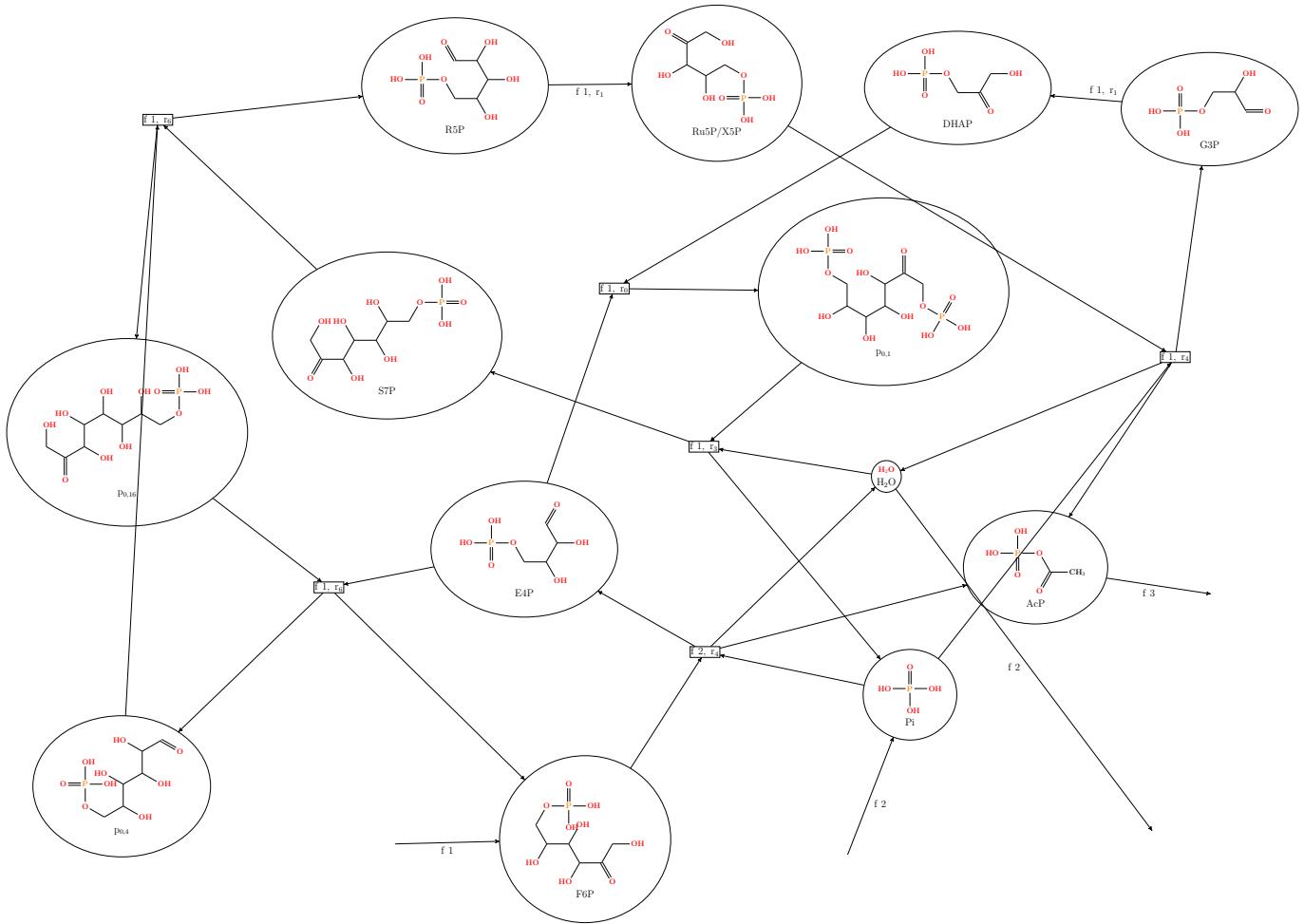
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/509_dg_0_11100_f_0_67_filt

$$|E| = 8 \quad |P| = 9$$

0.17.29 Solution 68

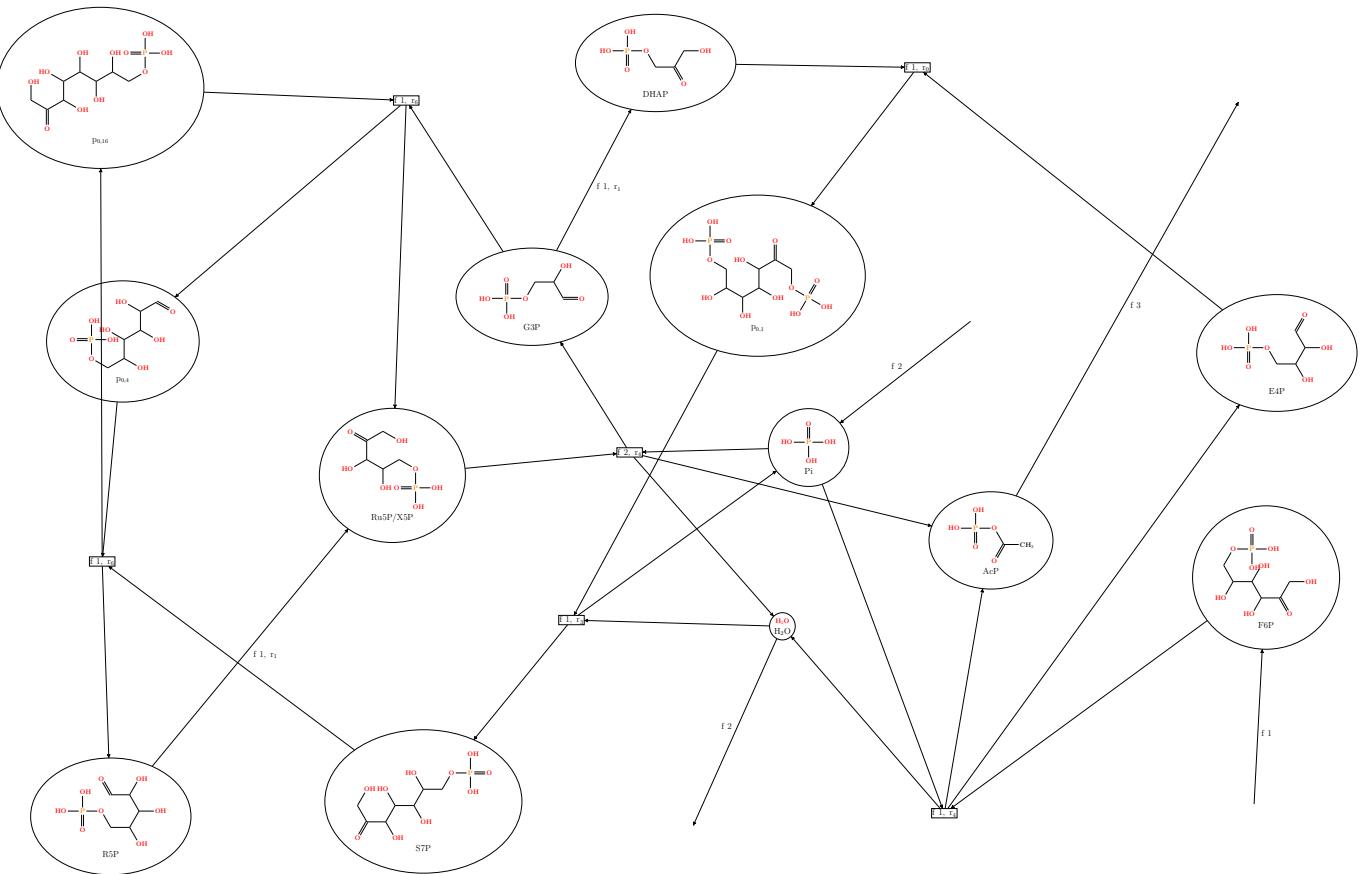
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/514_dg_0_11100_f_0_68_filt

$$|E| = 8 \quad |P| = 9$$

0.17.30 Solution 73

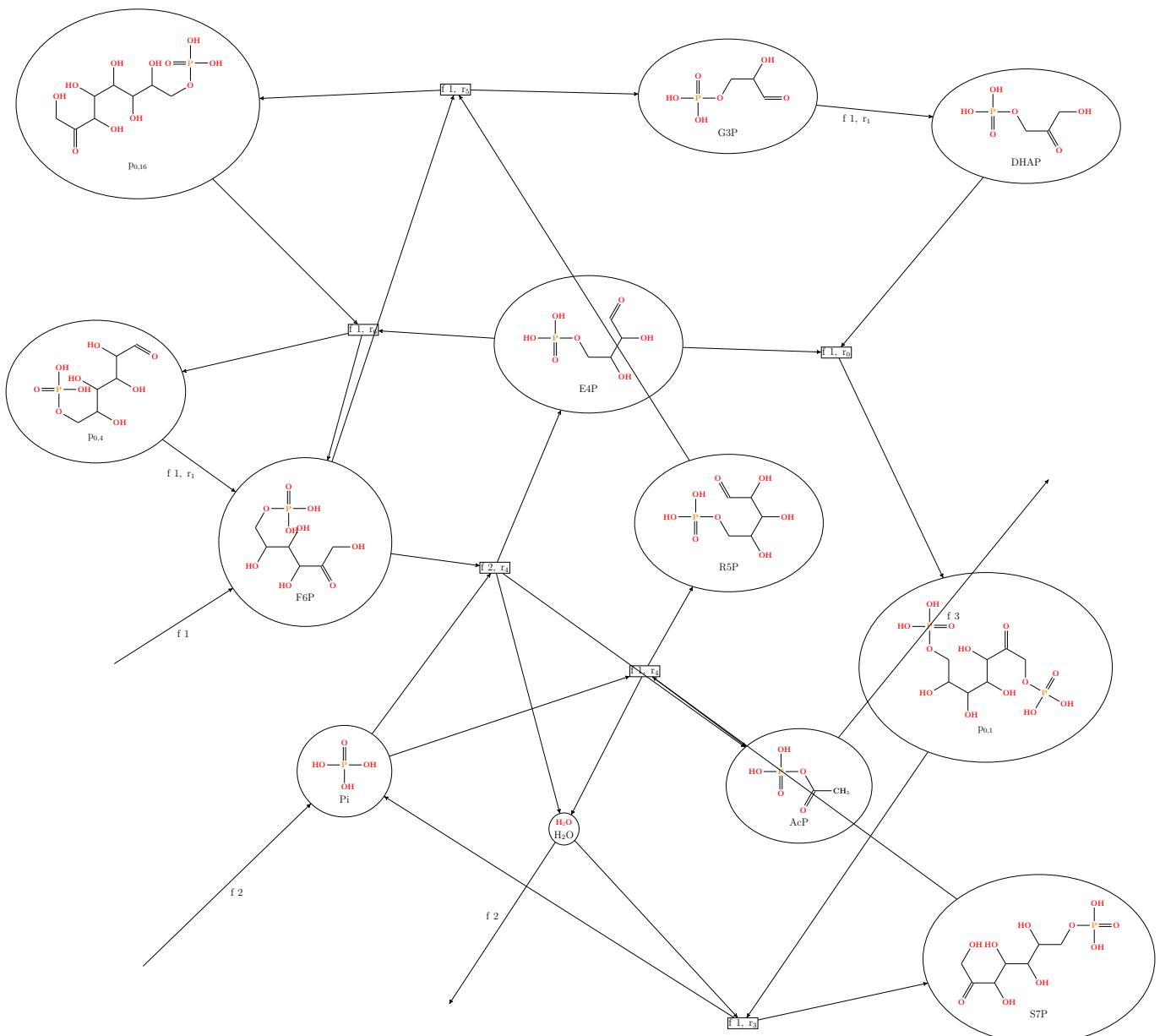
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/519_dg_0_11100_f_0_73_filt

$$|E| = 8 \quad |P| = 9$$

0.17.31 Solution 75

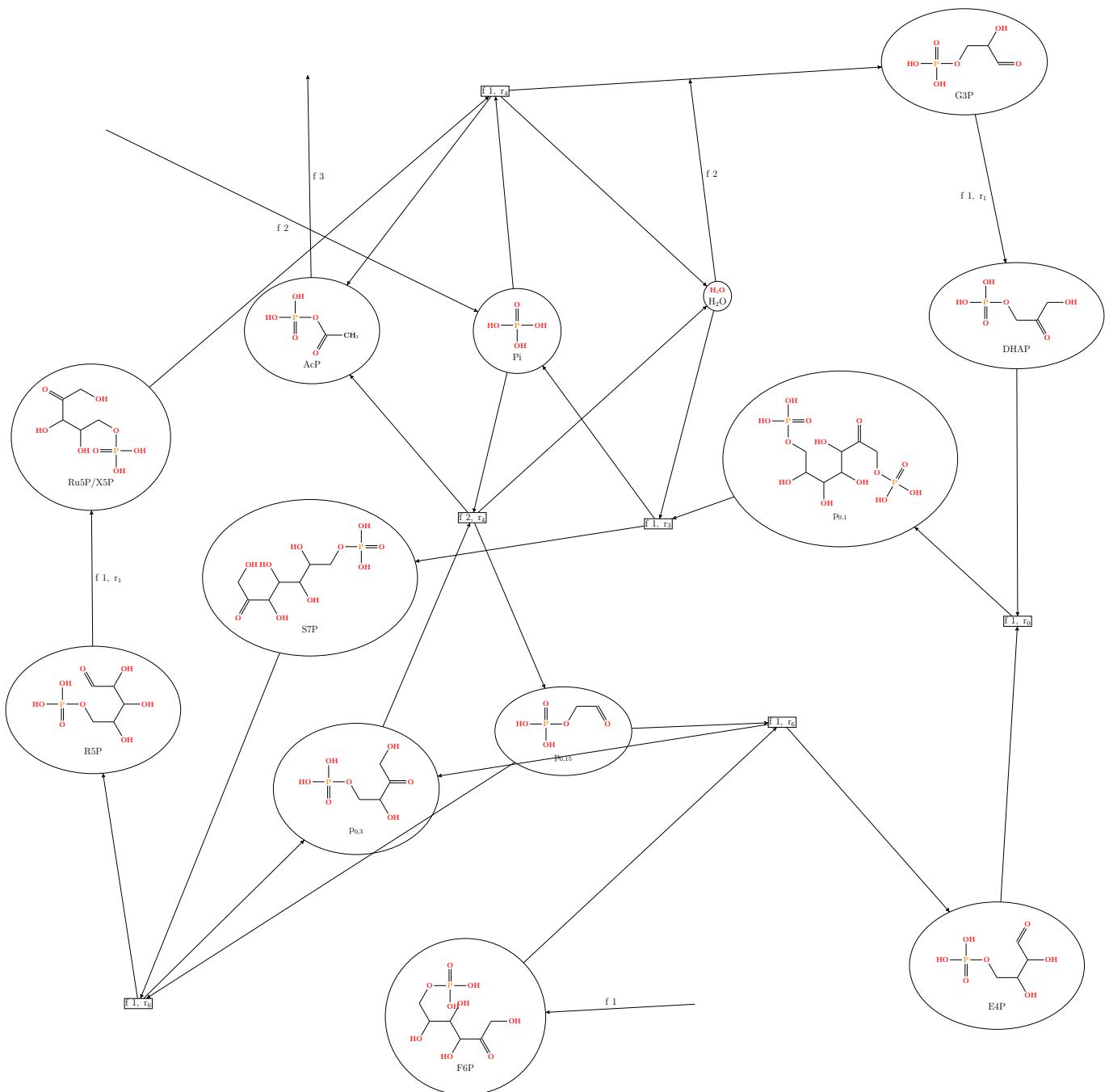
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/524_dg_0_11100_f_0_75_filt

$$|E| = 8 \quad |P| = 9$$

0.17.32 Solution 77

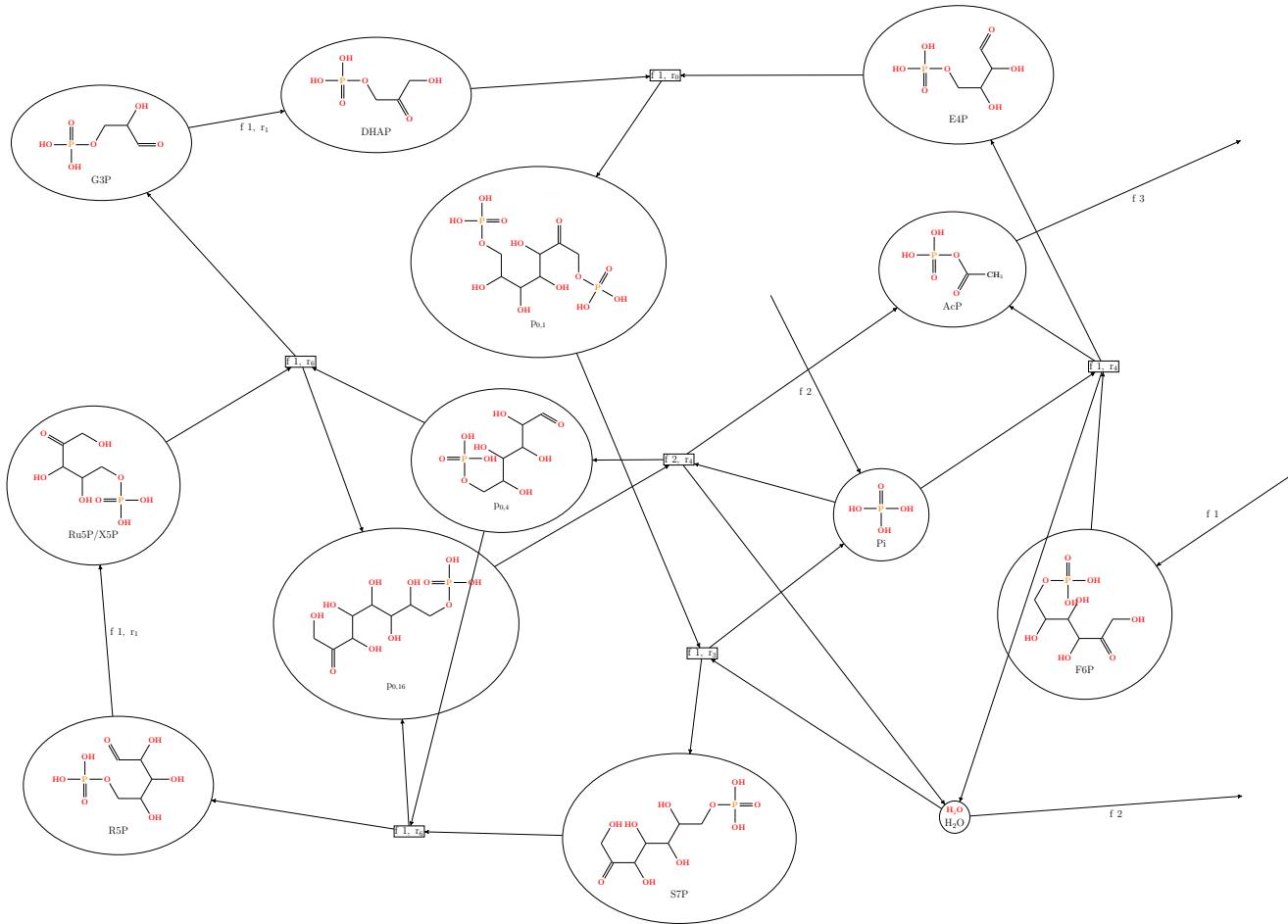
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/529_dg_0_11100_f_0_77_filt

$$|E| = 8 \quad |P| = 9$$

0.17.33 Solution 78

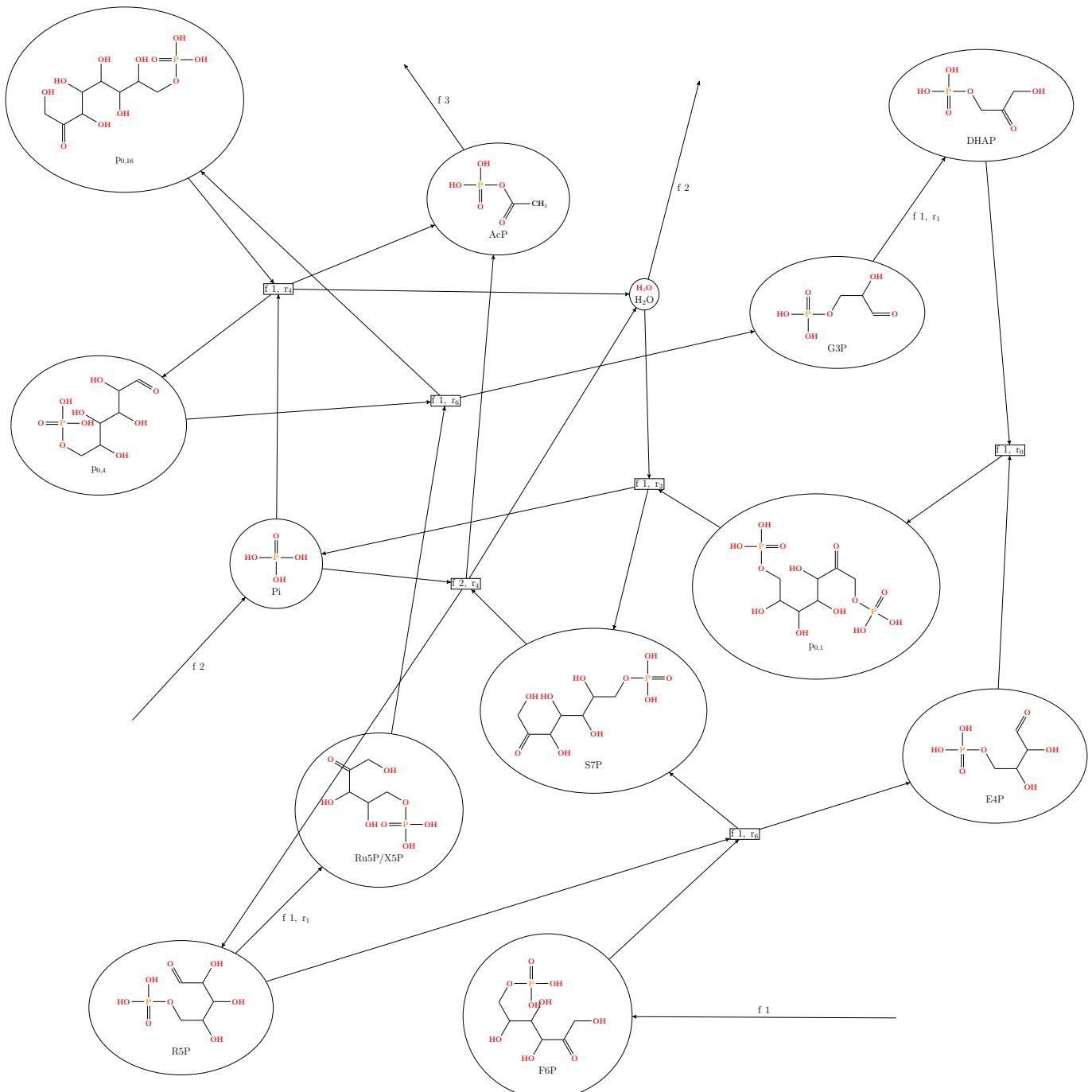
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/534_dg_0_11100_f_0_78_filt

$$|E| = 8 \quad |P| = 9$$

0.17.34 Solution 79

Overall Data

Objective value (integral): 9

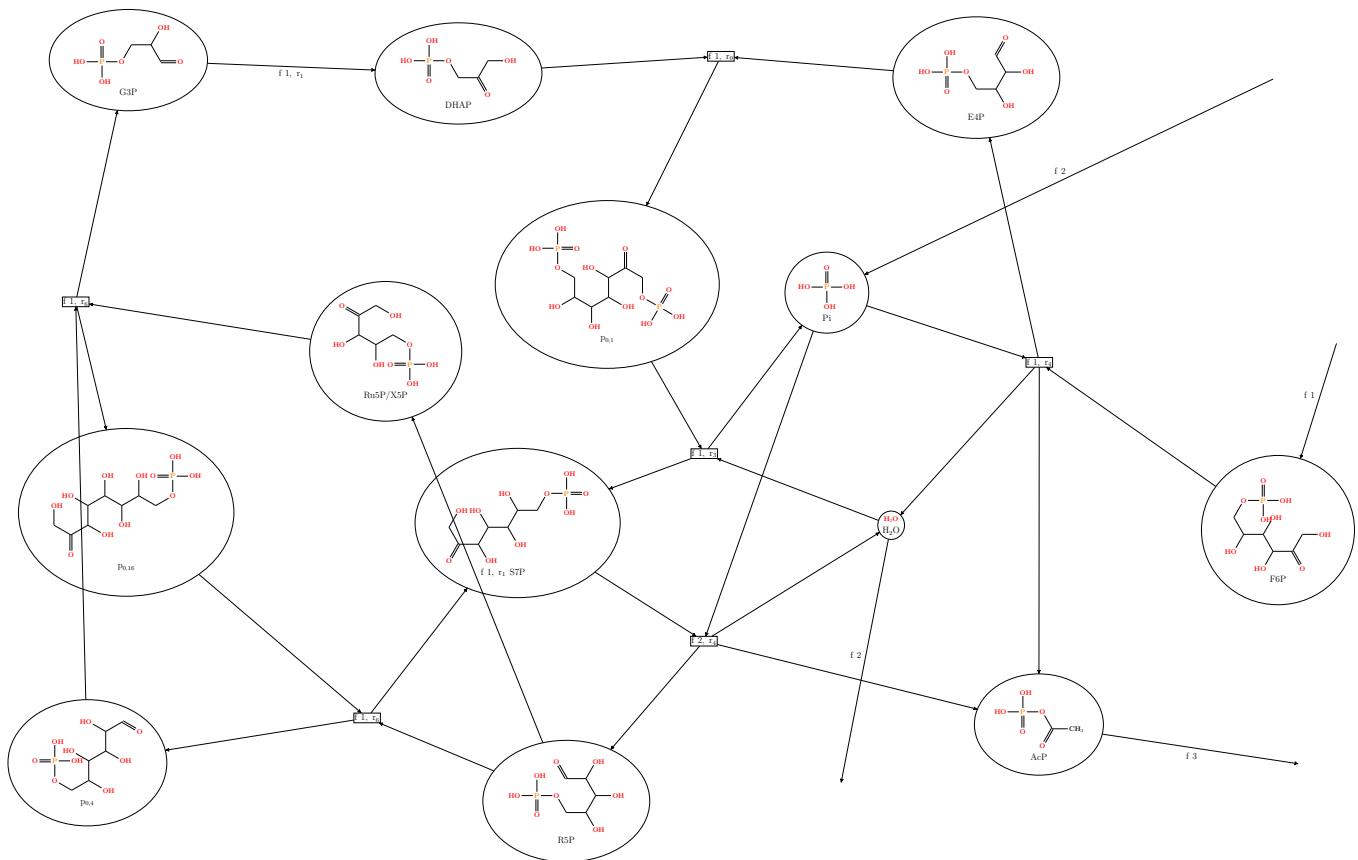
Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2

Pi

2 0

Filtered Graph



File: out/539_dg_0_11100_f_0_79_filt

$$|E| = 8 \quad |P| = 9$$

0.17.35 Solution 80

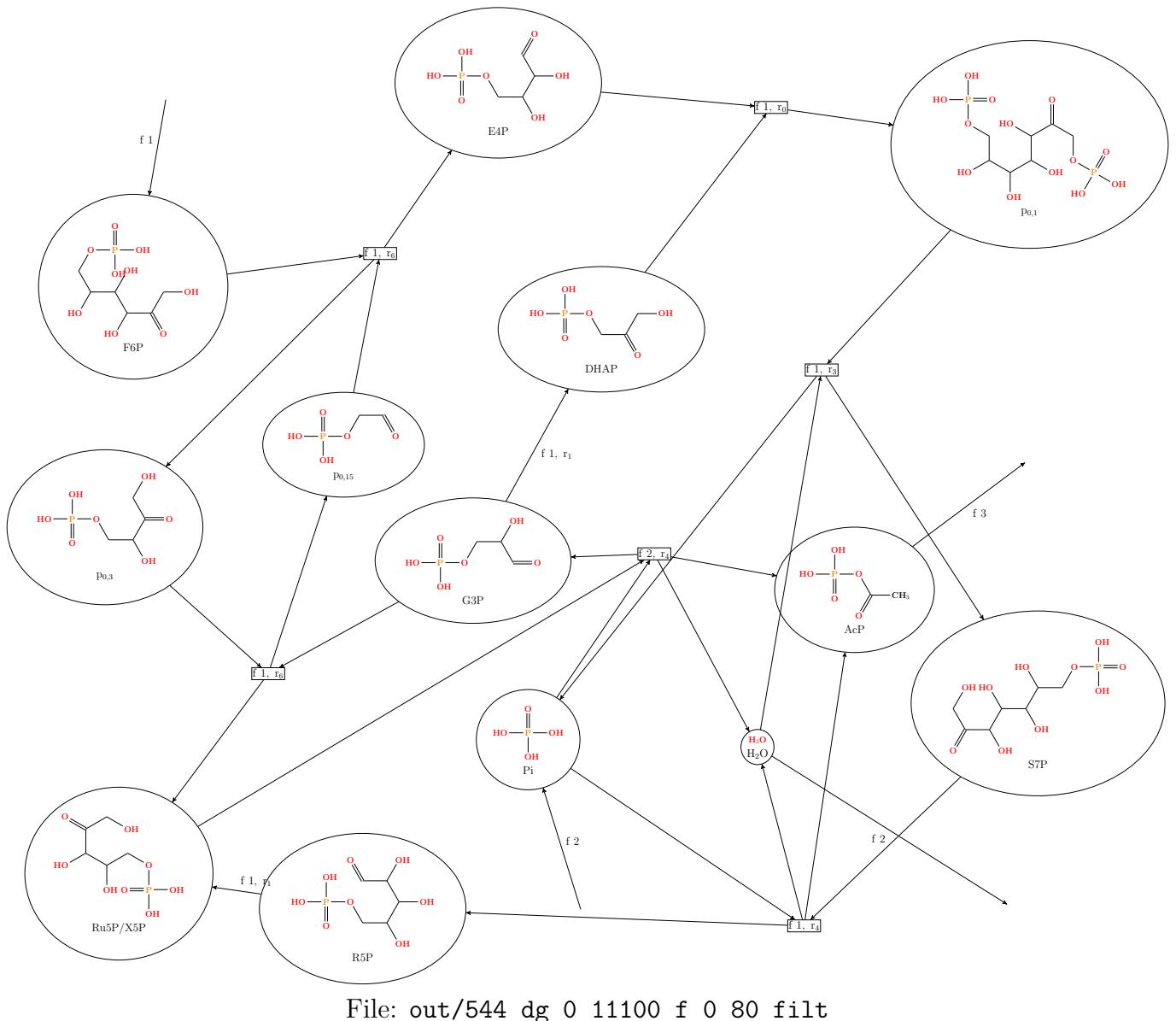
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



$$|E| = 8 \quad |P| = 9$$

0.17.36 Solution 81

Overall Data

Objective value (integral): 9

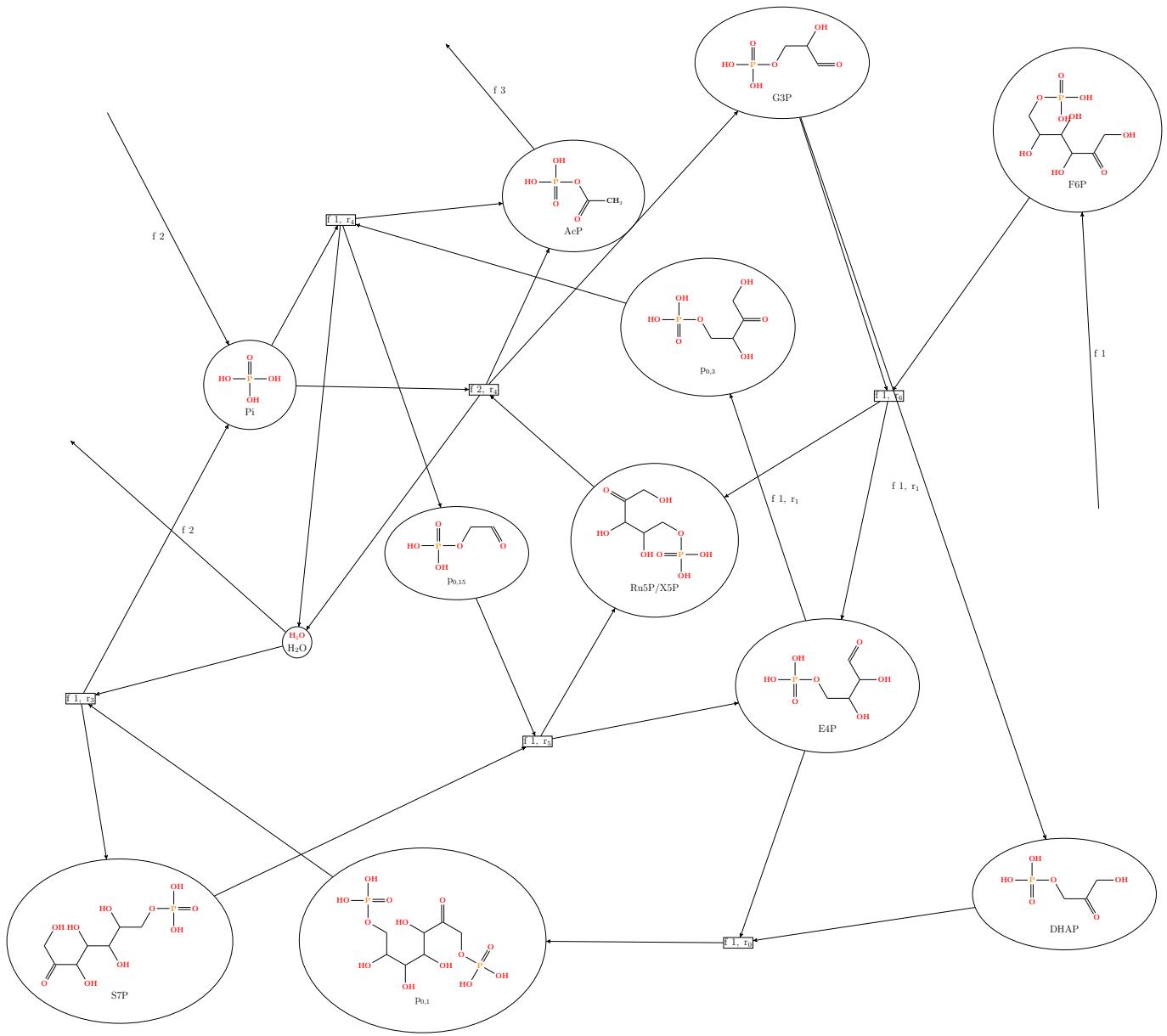
Vertex/Graph In Out

AcP 0 3

F6P 1 0

H 20 0 2

Filtered Graph



File: out/549_dg_0_11100_f_0_81_filt

$$|E| = 8 \quad |P| = 9$$

0.17.37 Solution 87

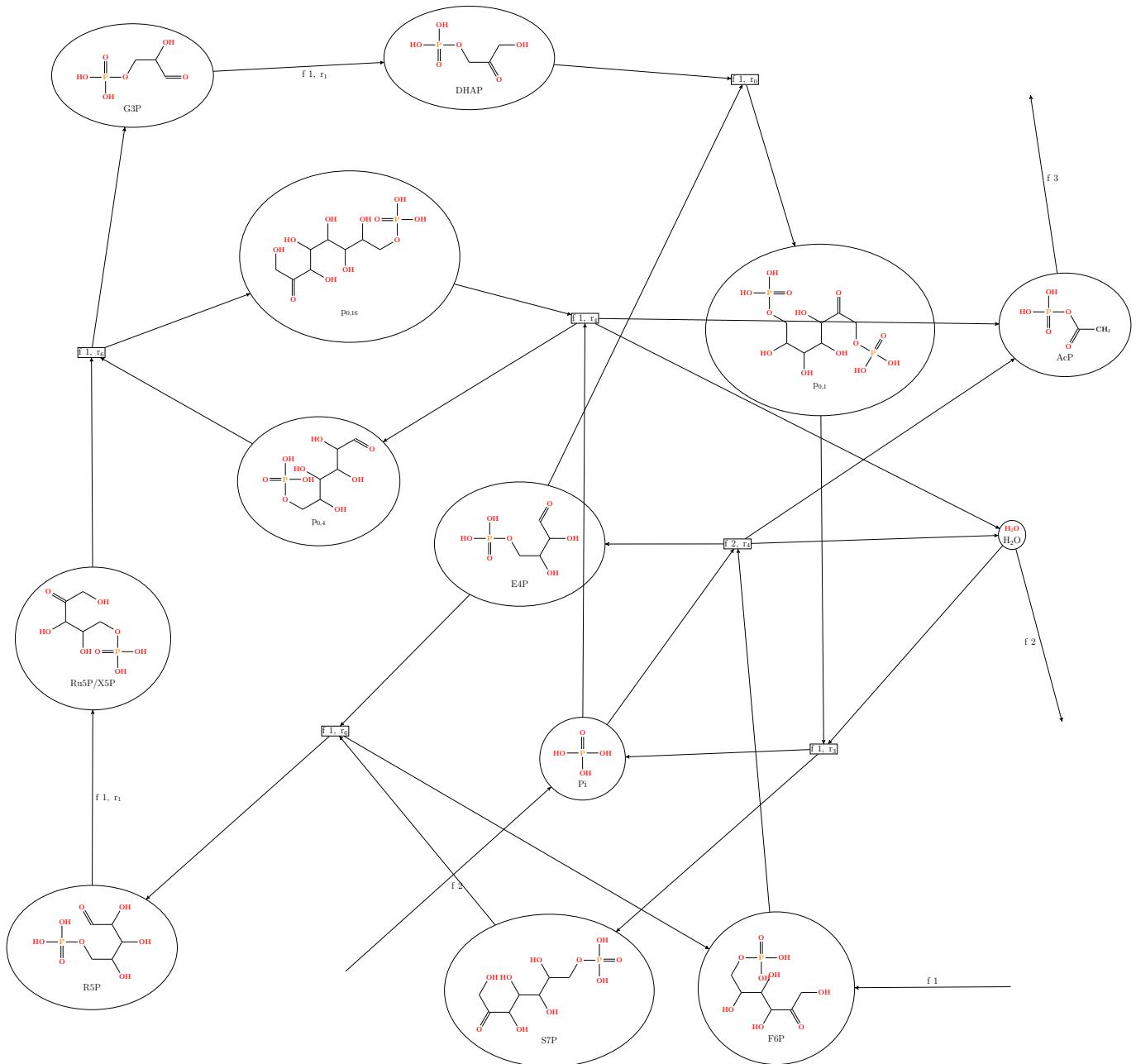
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/554_dg_0_11100_f_0_87_filt

$$|E| = 8 \quad |P| = 9$$

0.17.38 Solution 89

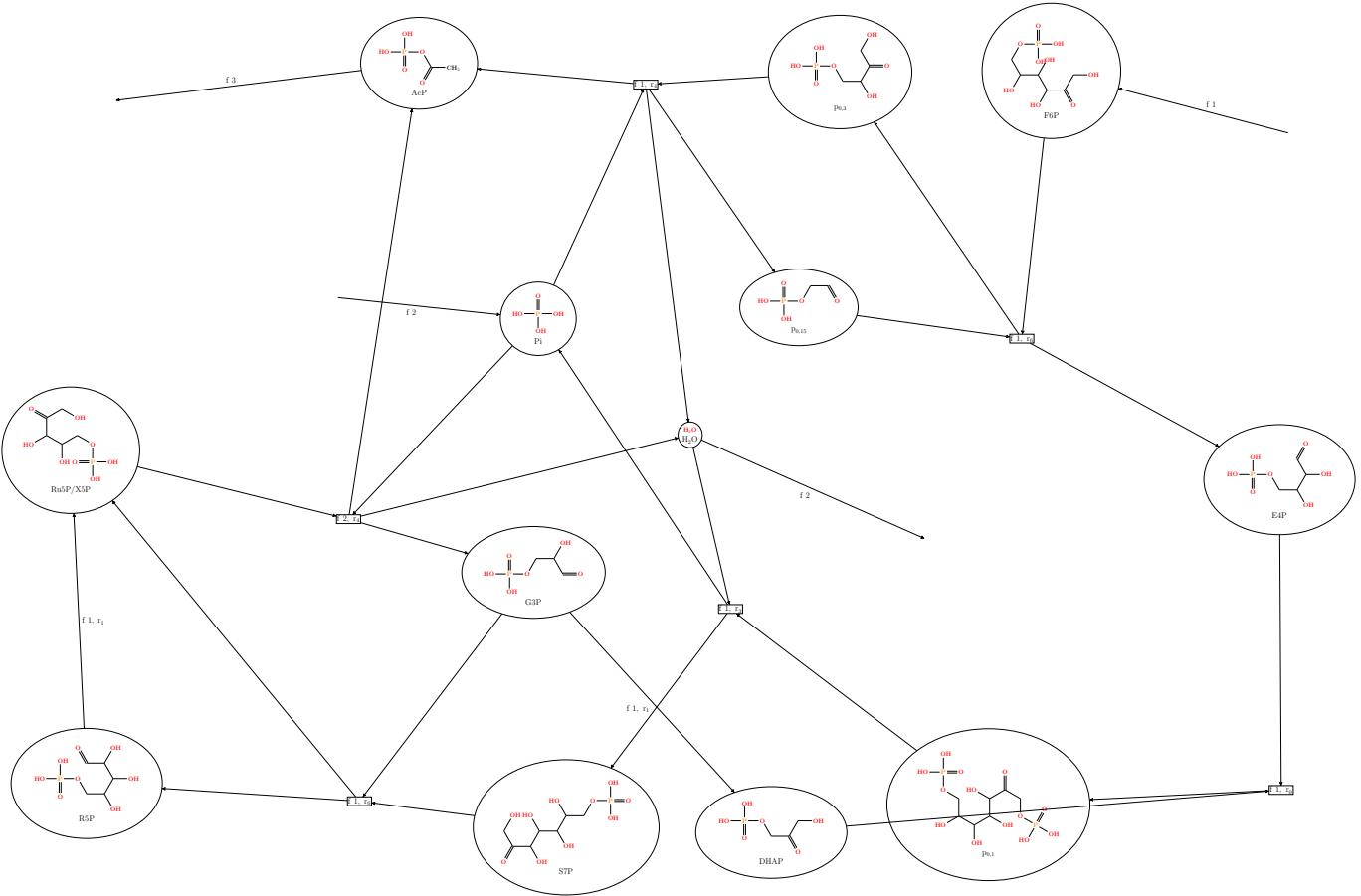
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/559_dg_0_11100_f_0_89_filt

$$|E| = 8 \quad |P| = 9$$

0.17.39 Solution 91

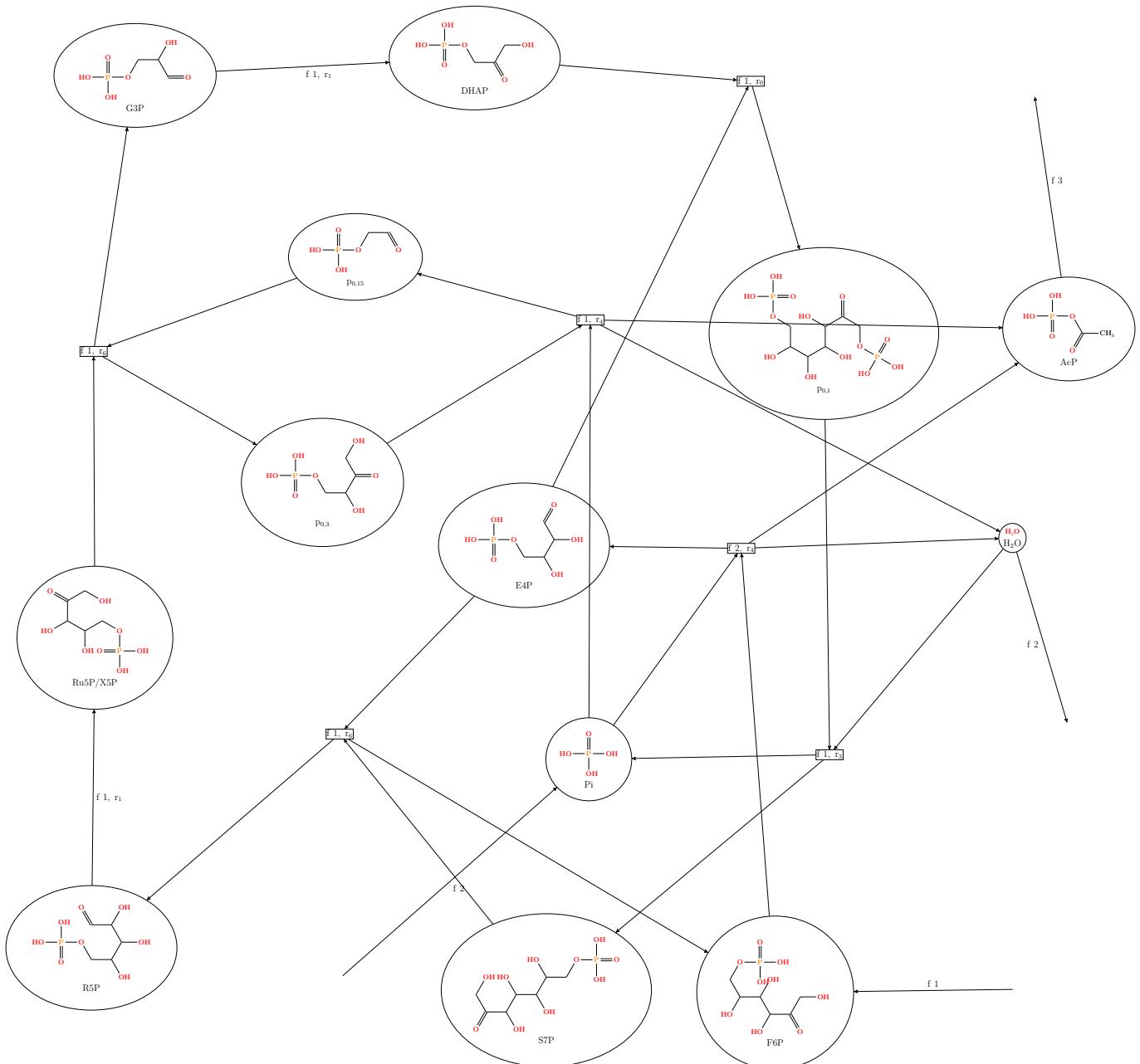
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/564_dg_0_11100_f_0_91_filt

$$|E| = 8 \quad |P| = 9$$

0.17.40 Solution 94

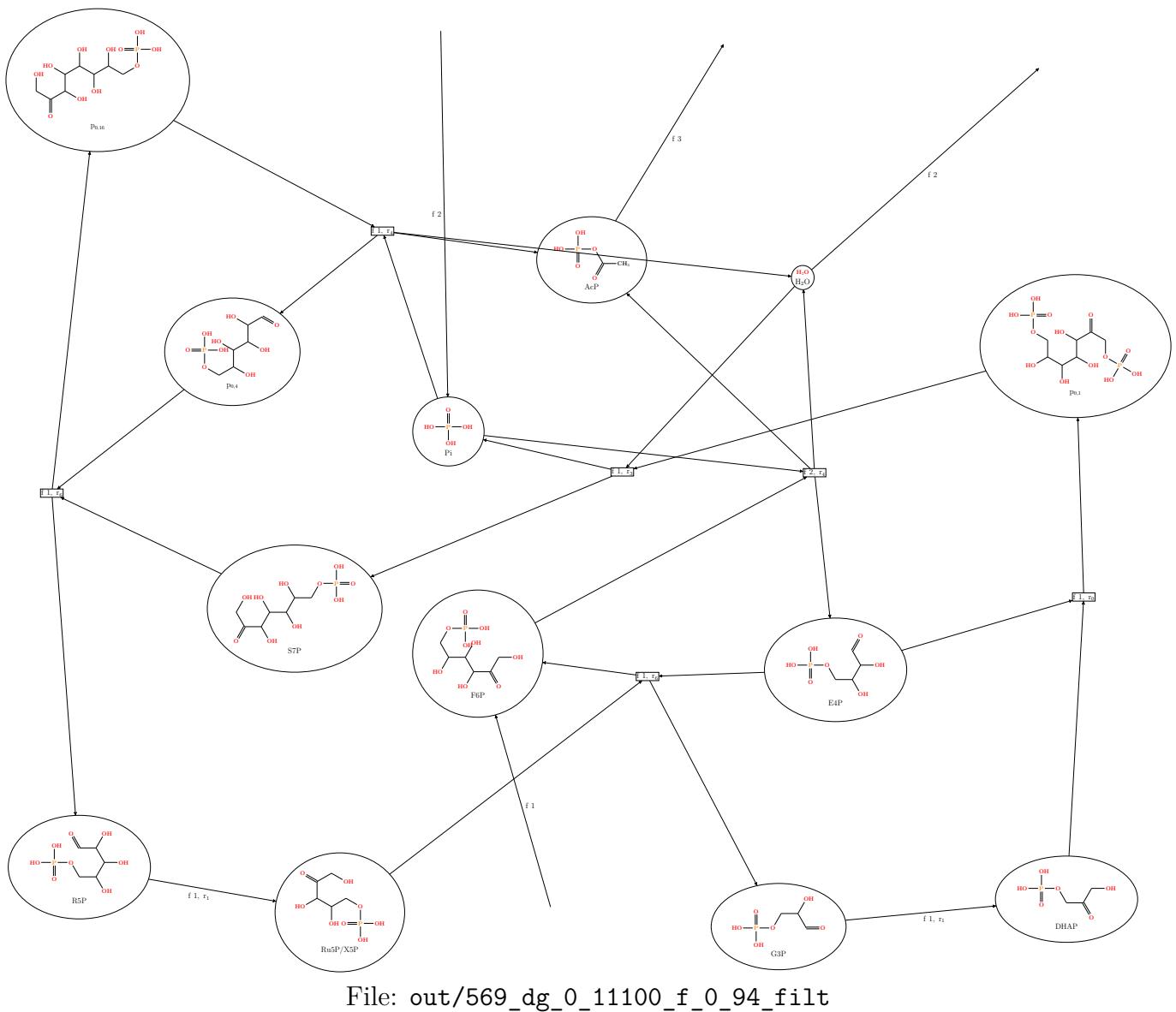
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/569_dg_0_11100_f_0_94_filt

$$|E| = 8 \quad |P| = 9$$

0.17.41 Solution 95

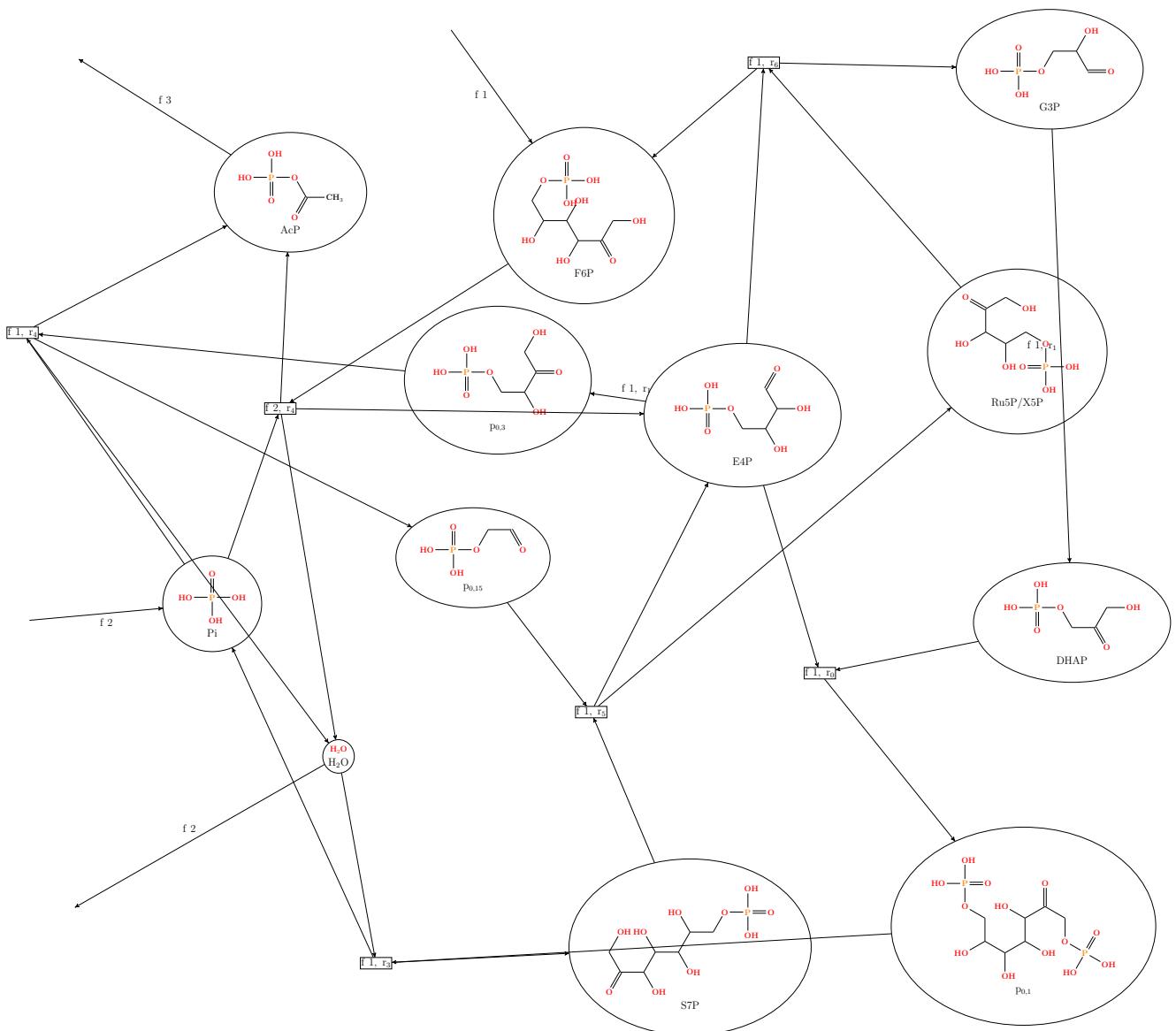
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/574_dg_0_11100_f_0_95_filt

$$|E| = 8 \quad |P| = 9$$

0.17.42 Solution 96

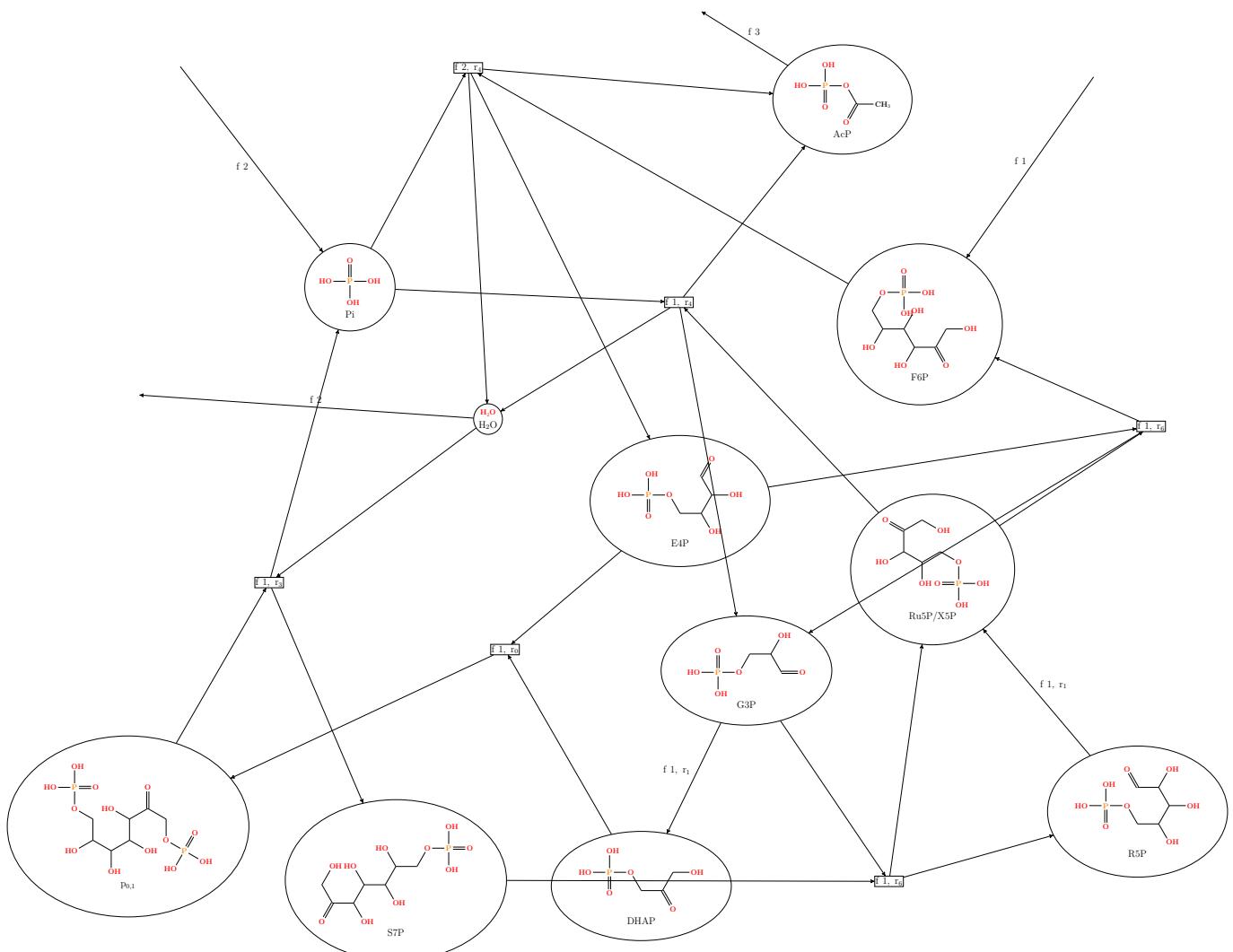
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/579_dg_0_11100_f_0_96_filt

$$|E| = 8 \quad |P| = 9$$

0.17.43 Solution 100

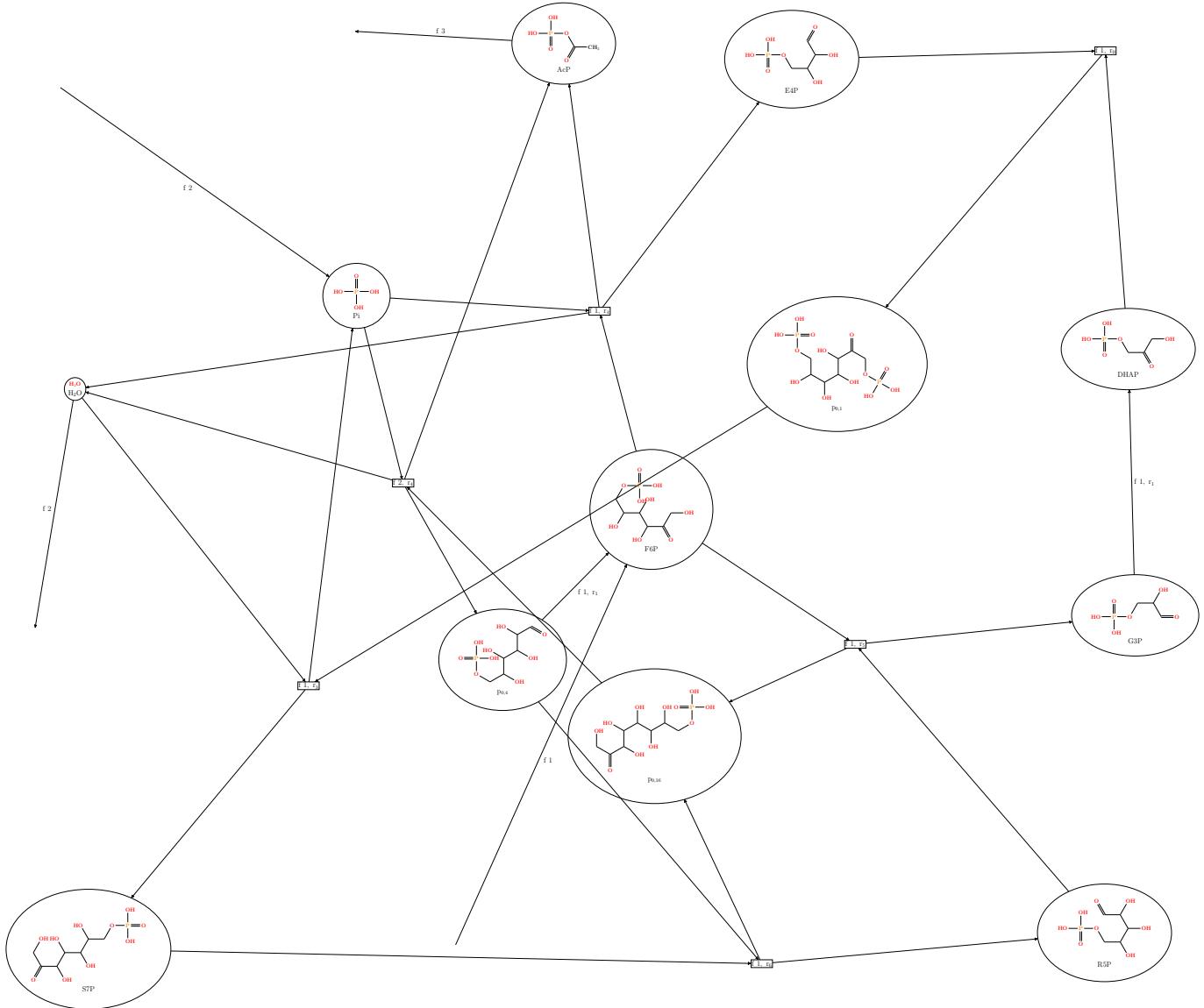
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/584_dg_0_11100_f_0_100_filt

$$|E| = 8 \quad |P| = 9$$

0.17.44 Solution 101

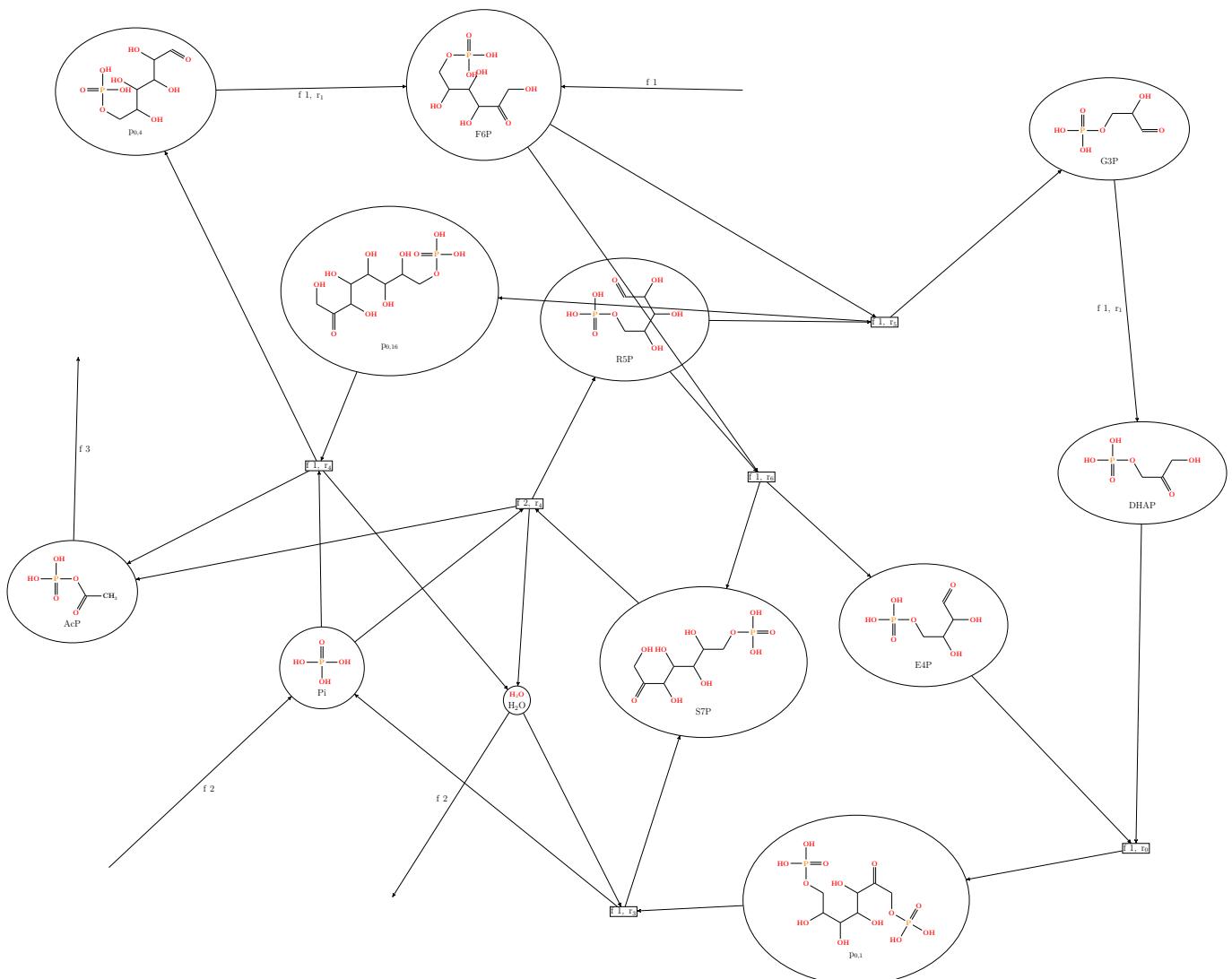
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/589_dg_0_11100_f_0_101_filt

$$|E| = 8 \quad |P| = 9$$

0.17.45 Solution 103

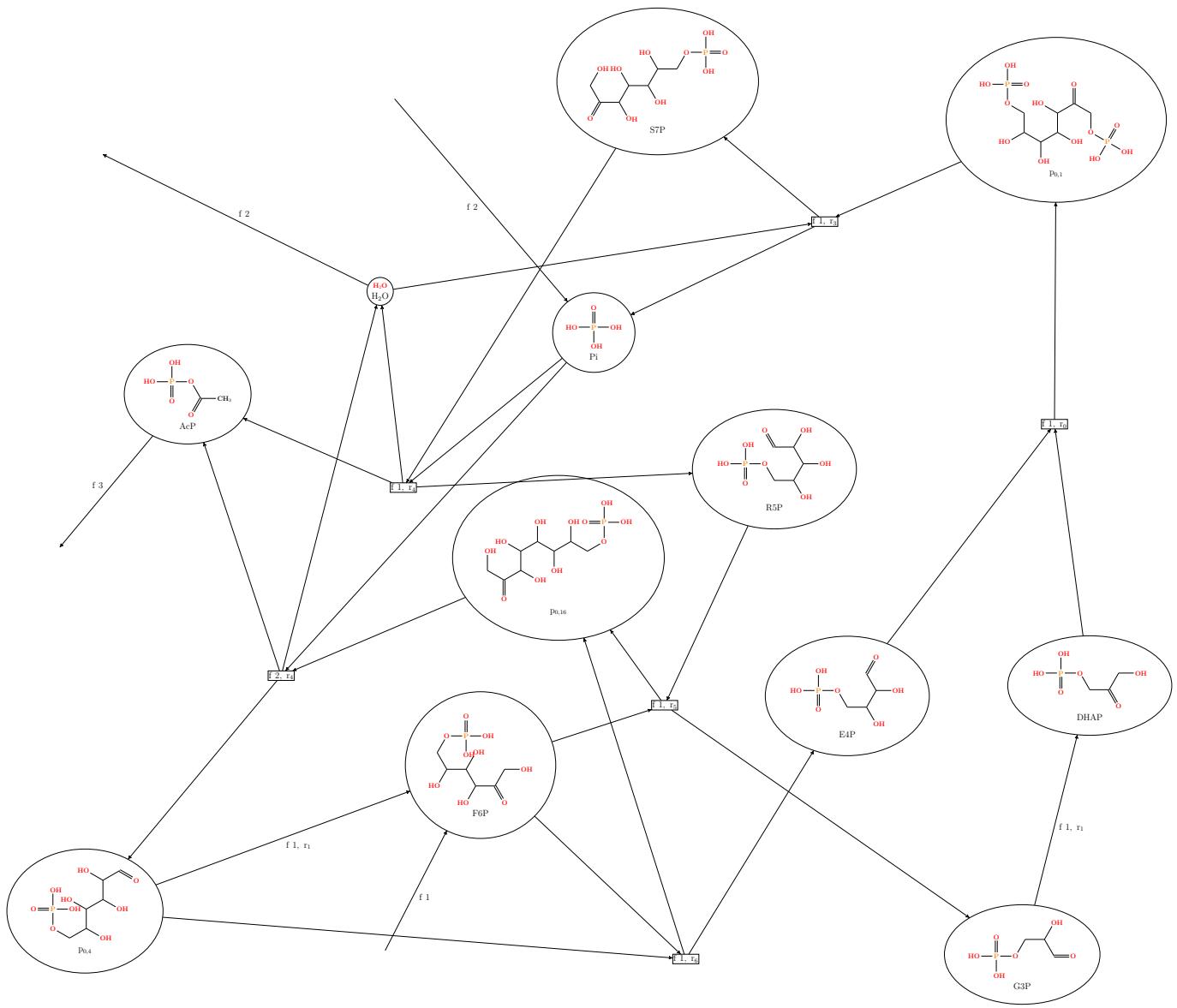
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/594_dg_0_11100_f_0_103_filt

$$|E| = 8 \quad |P| = 9$$

0.17.46 Solution 105

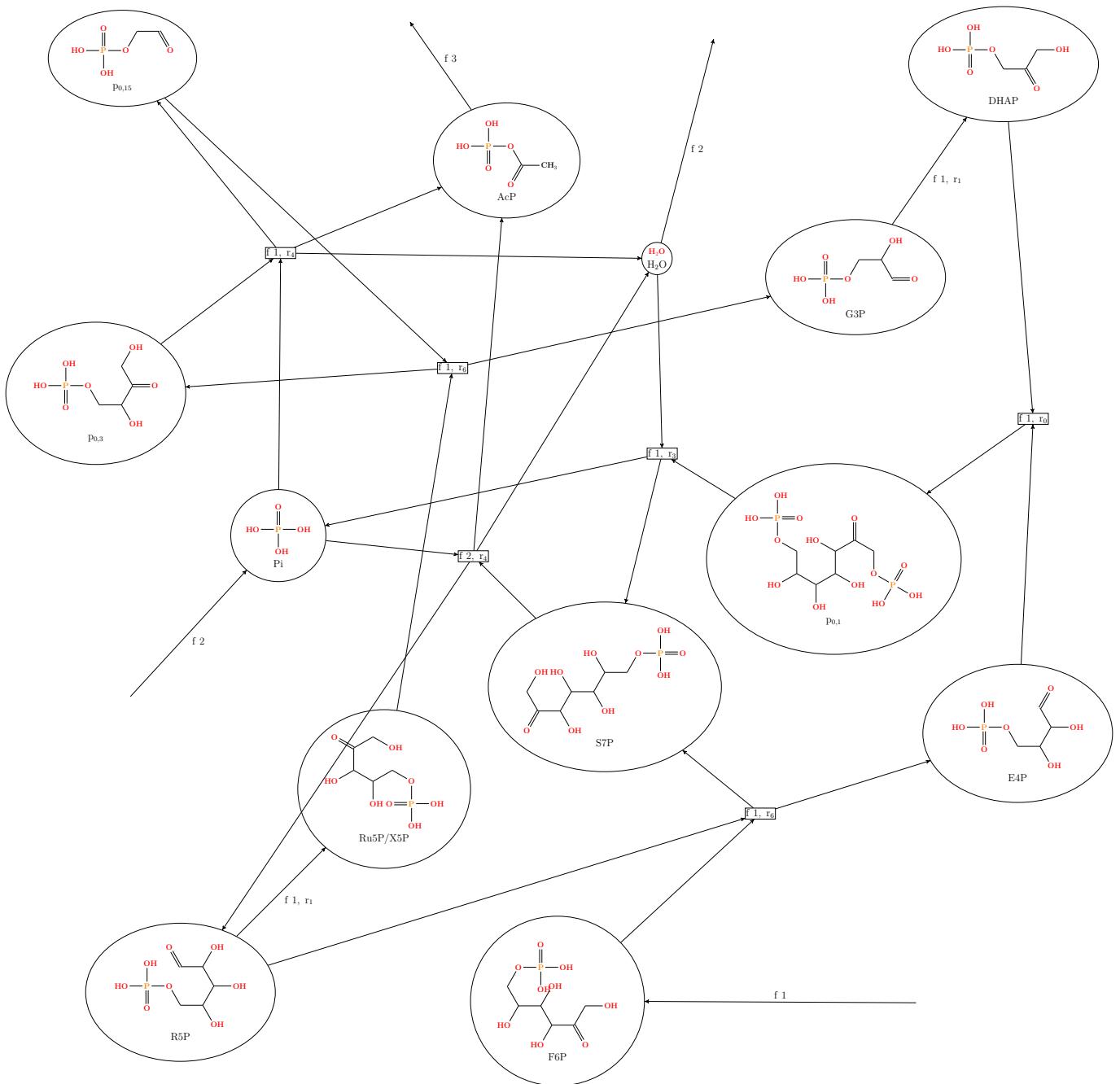
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/599 dg 0 11100 f 0 105 filt

$$|E| = 8 \quad |P| = 9$$

0.17.47 Solution 106

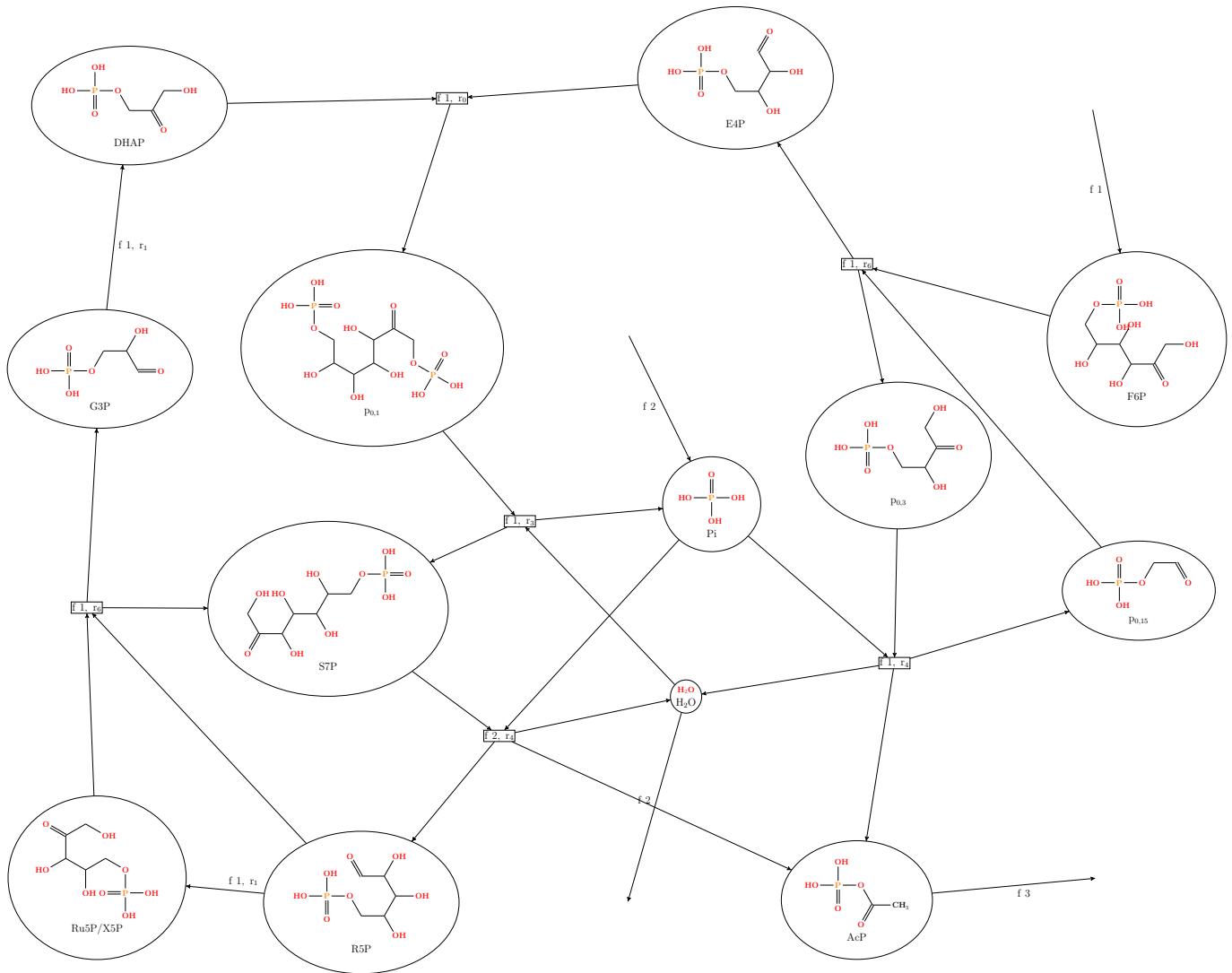
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/604_dg_0_11100_f_0_106_filt

$$|E| = 8 \quad |P| = 9$$

0.17.48 Solution 108

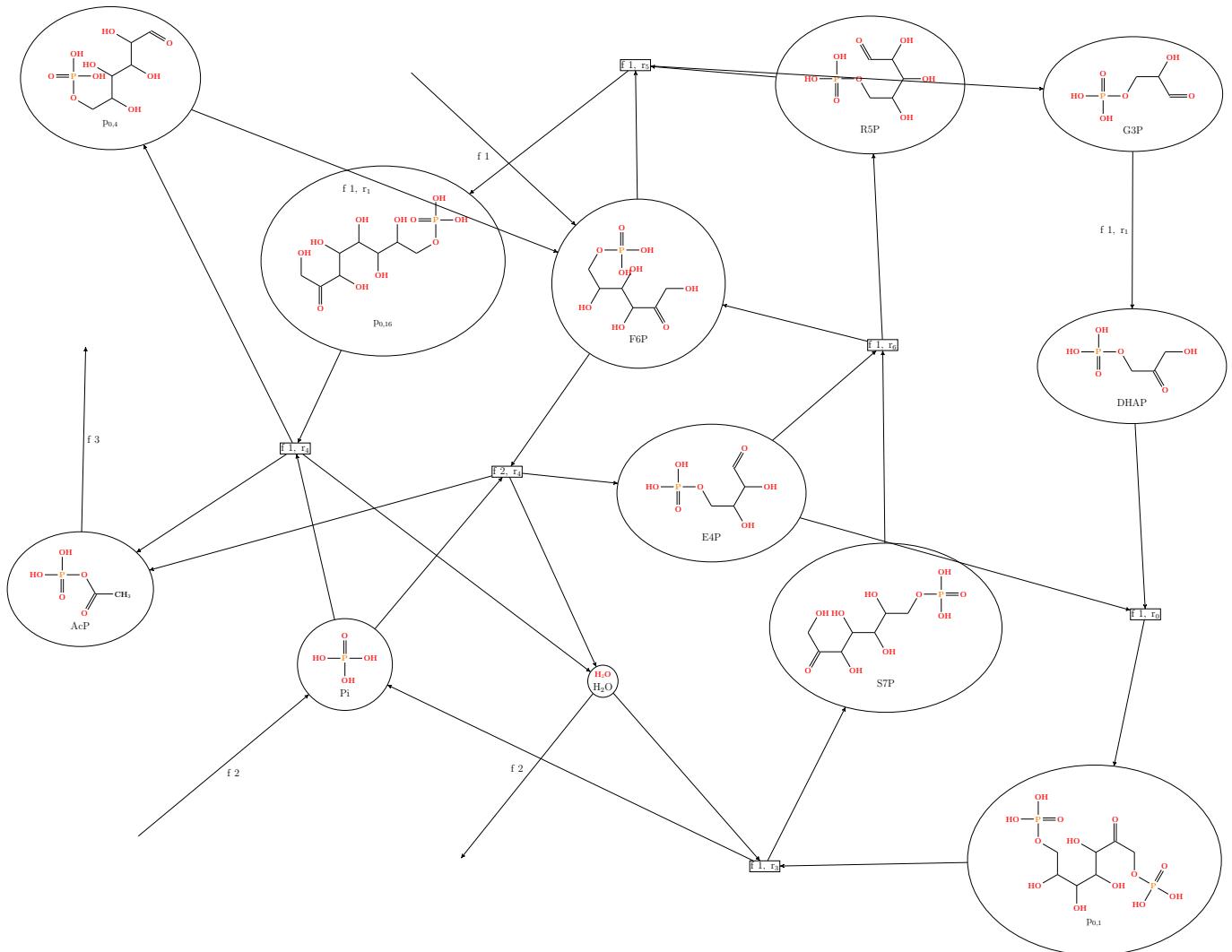
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/609_dg_0_11100_f_0_108_filt

$$|E| = 8 \quad |P| = 9$$

0.18 Enumerated Flows with 9 unique reactions

0.18.1 Solution 16

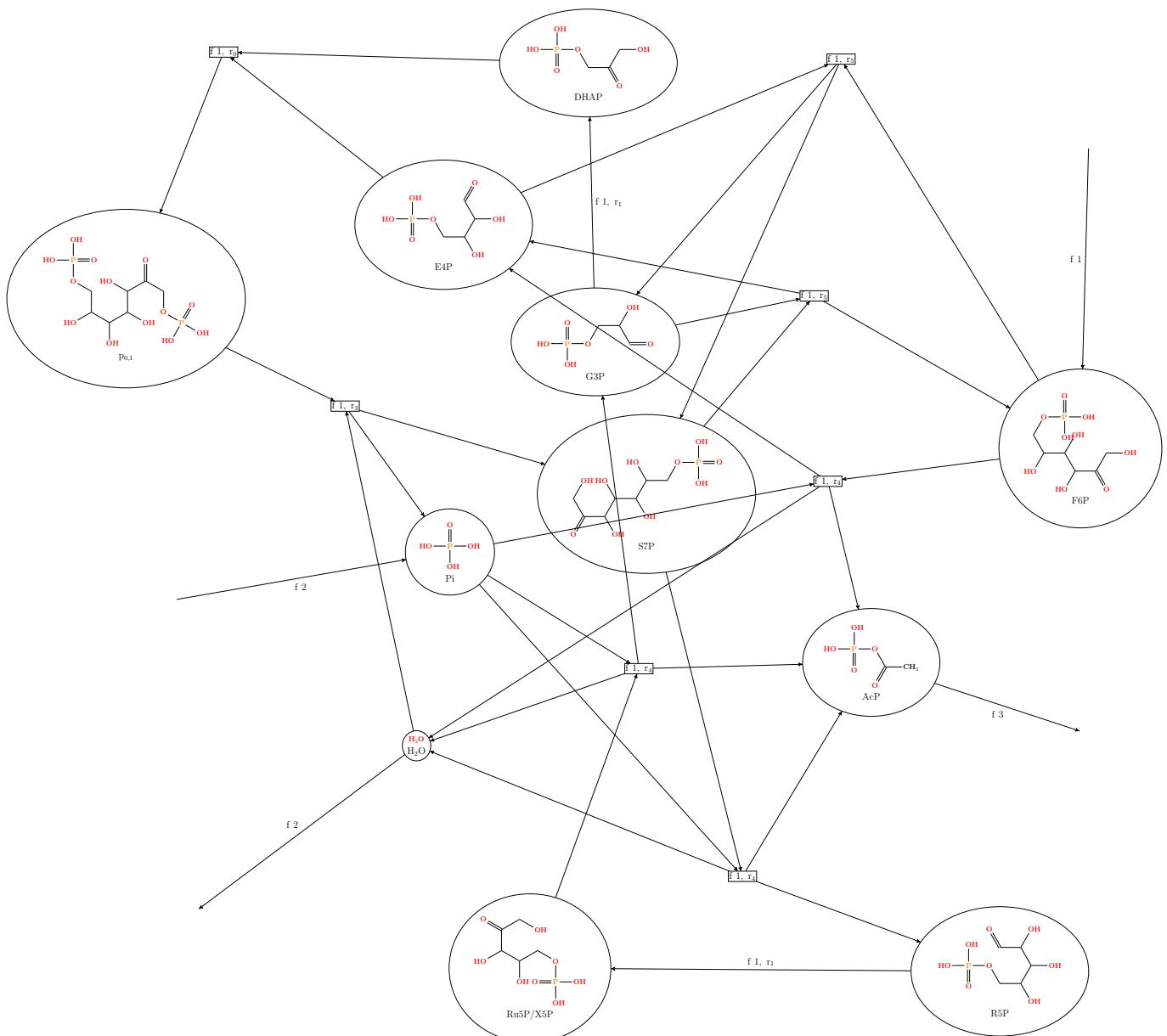
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/614_dg_0_11100_f_0_16_filt

$$|E| = 9 \quad |P| = 9$$

0.18.2 Solution 20

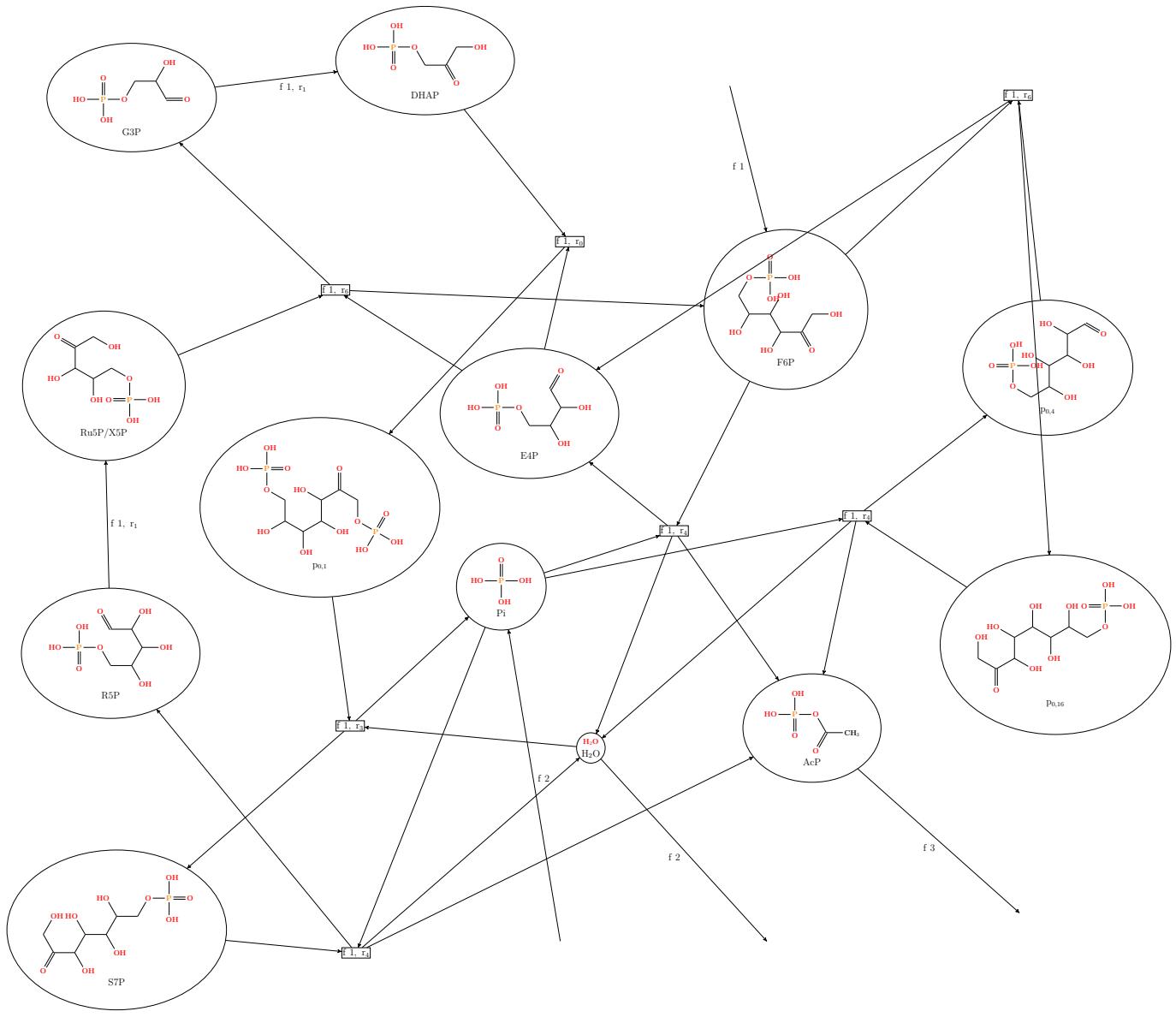
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/619_dg_0_11100_f_0_20_filt

$$|E| = 9 \quad |P| = 9$$

0.18.3 Solution 26

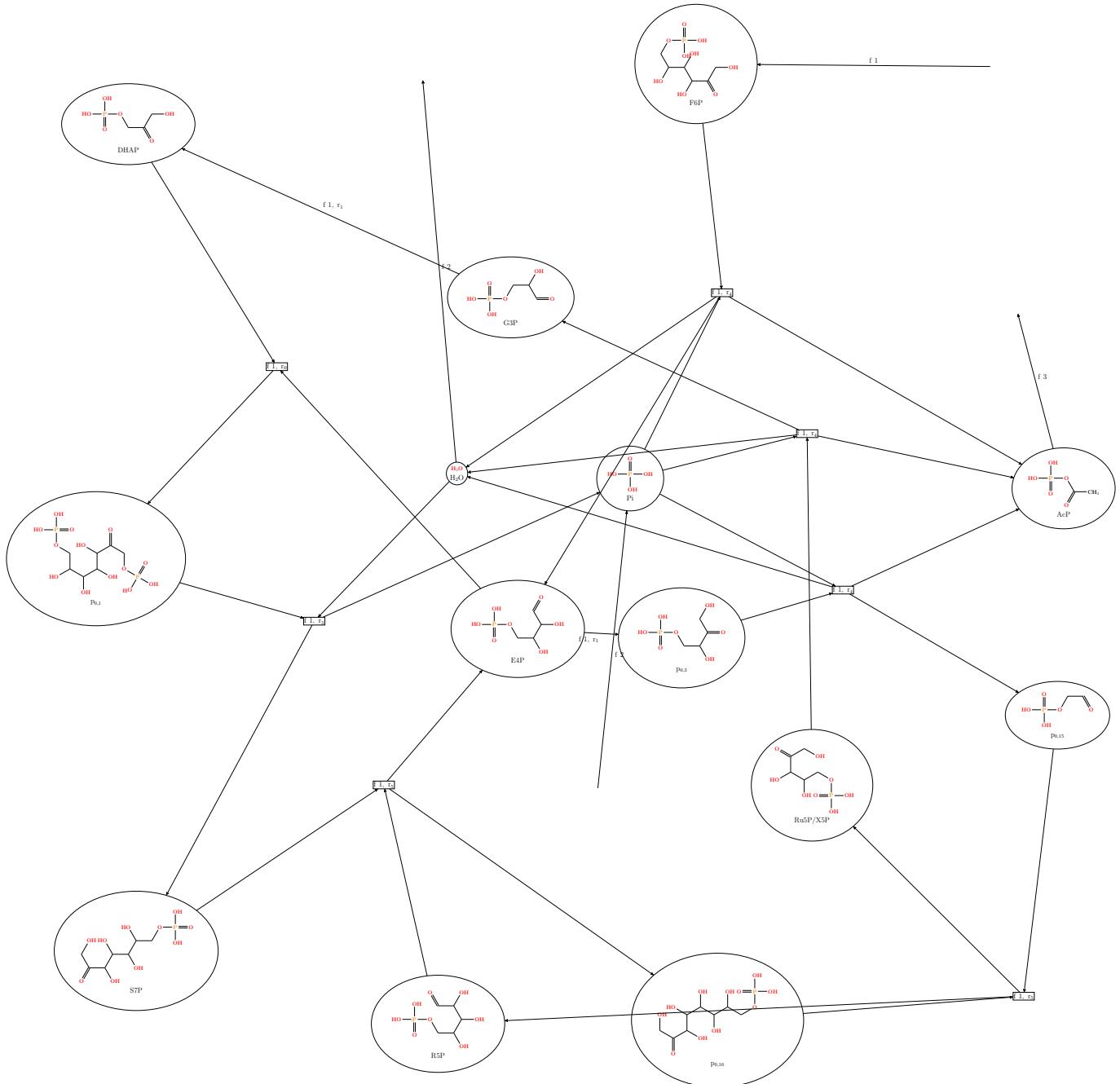
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/624_dg_0_11100_f_0_26_filt

$$|E| = 9 \quad |P| = 9$$

0.18.4 Solution 27

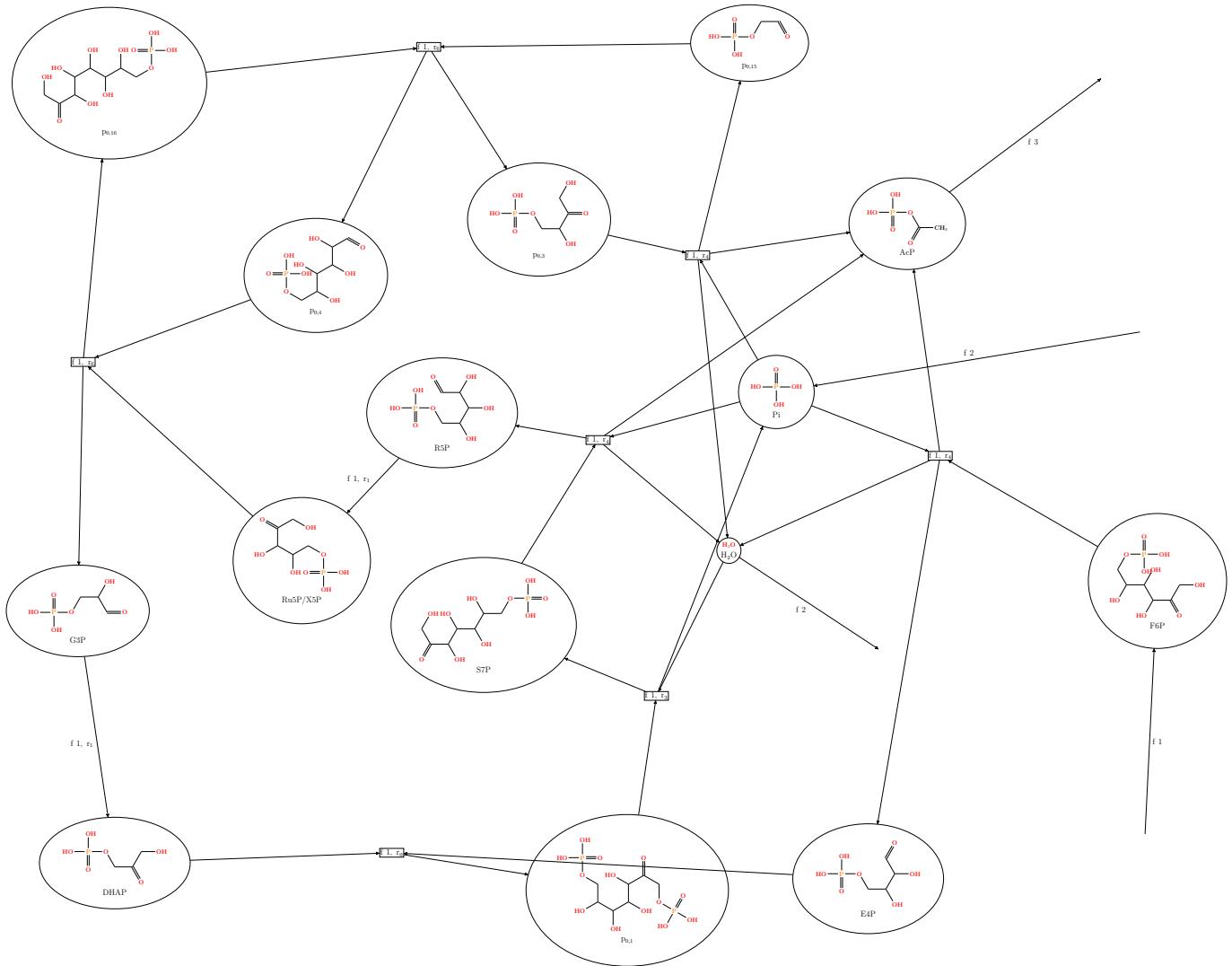
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/629_dg_0_11100_f_0_27_filt

$$|E| = 9 \quad |P| = 9$$

0.18.5 Solution 30

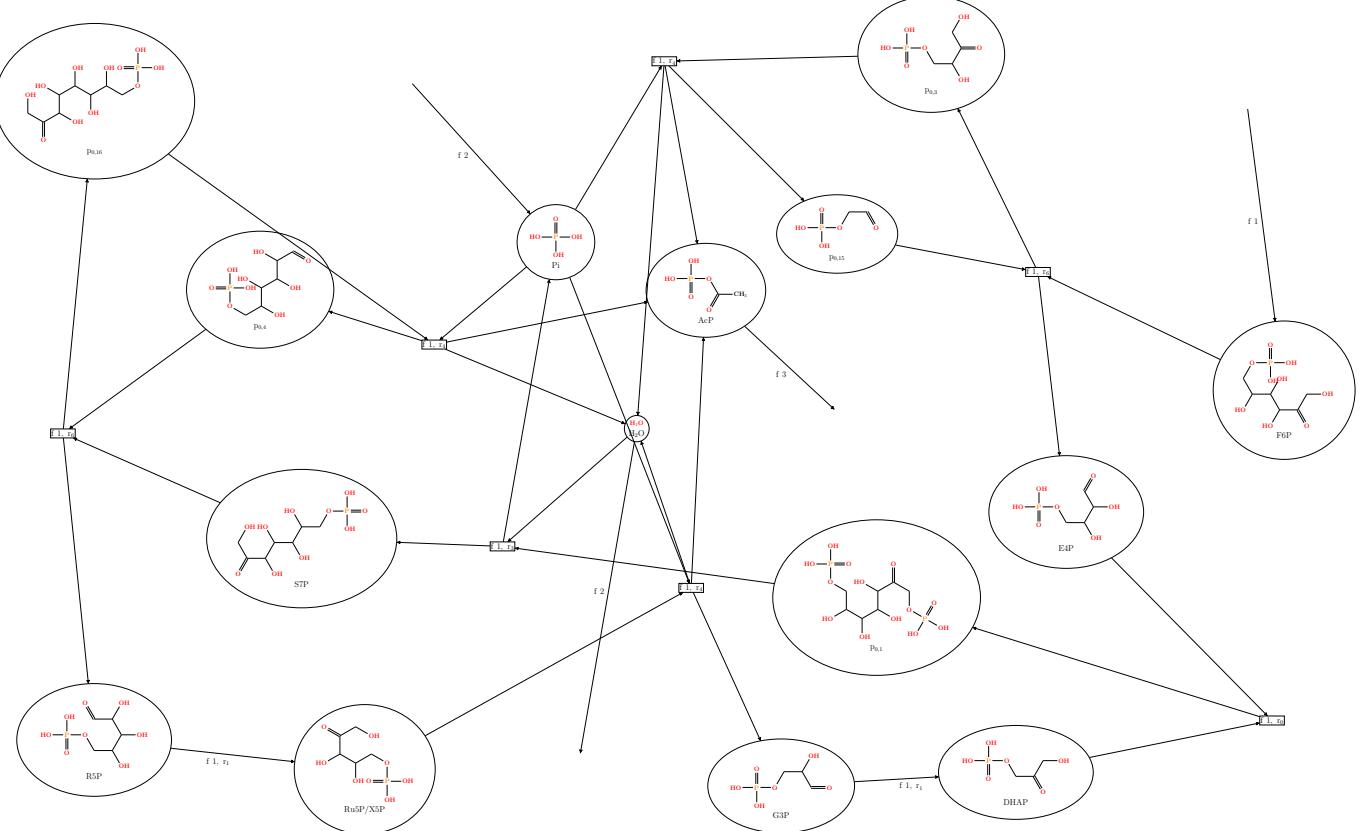
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/634_dg_0_11100_f_0_30_filt

$$|E| = 9 \quad |P| = 9$$

0.18.6 Solution 31

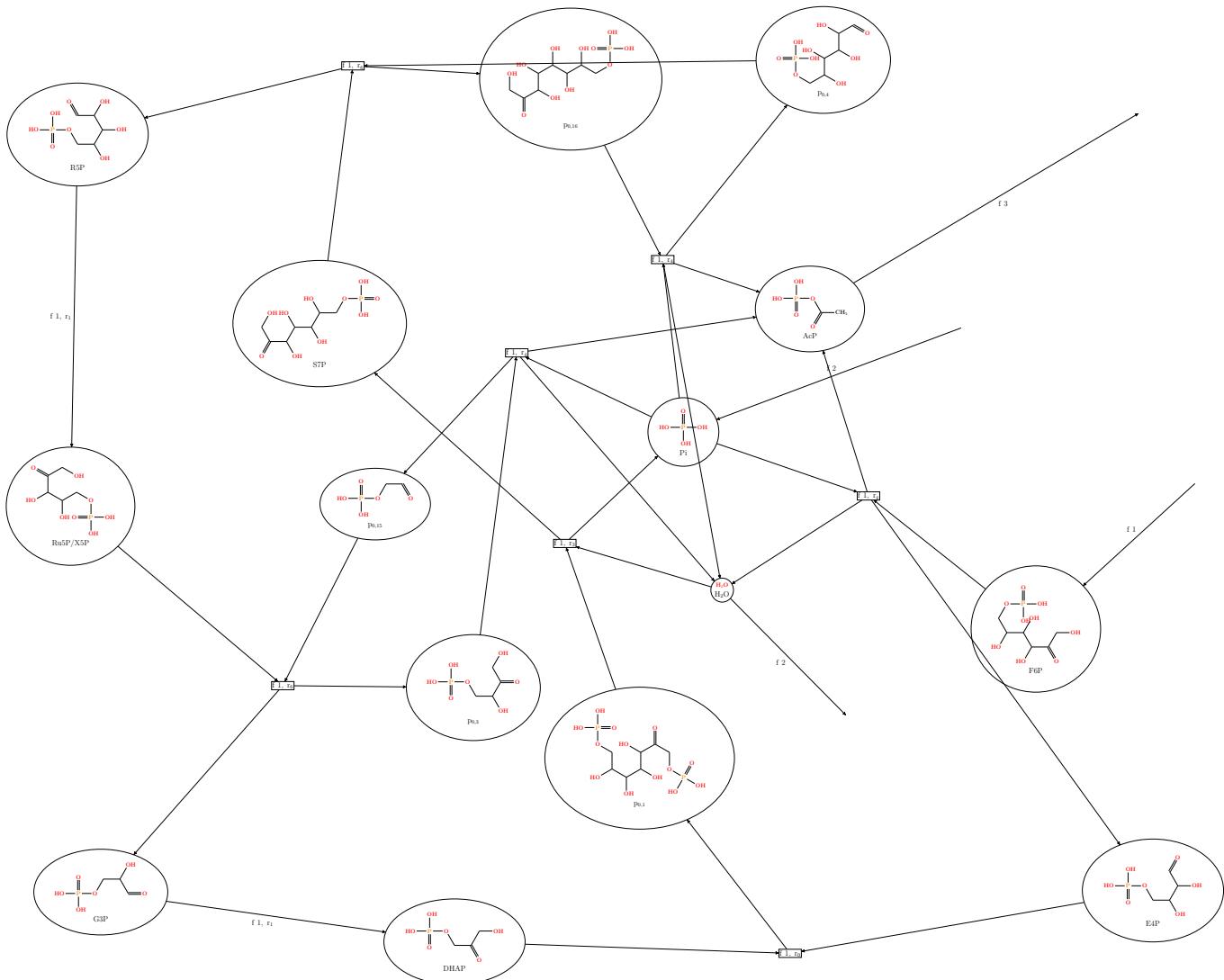
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/639 dg 0 11100 f 0 31 filt

$$|E| = 9 \quad |P| = 9$$

0.18.7 Solution 39

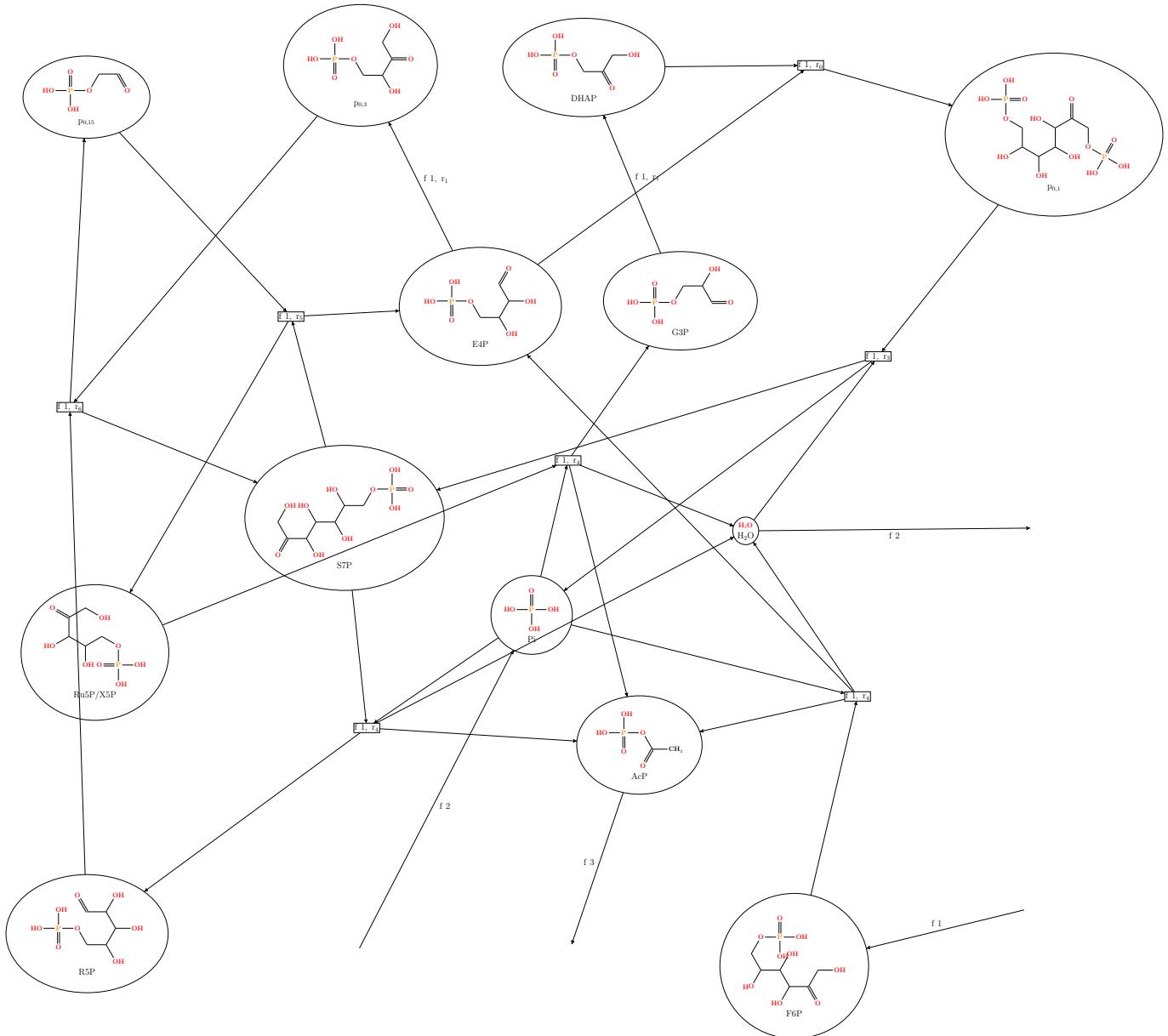
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/644_dg_0_11100_f_0_39_filt

$$|E| = 9 \quad |P| = 9$$

0.18.8 Solution 42

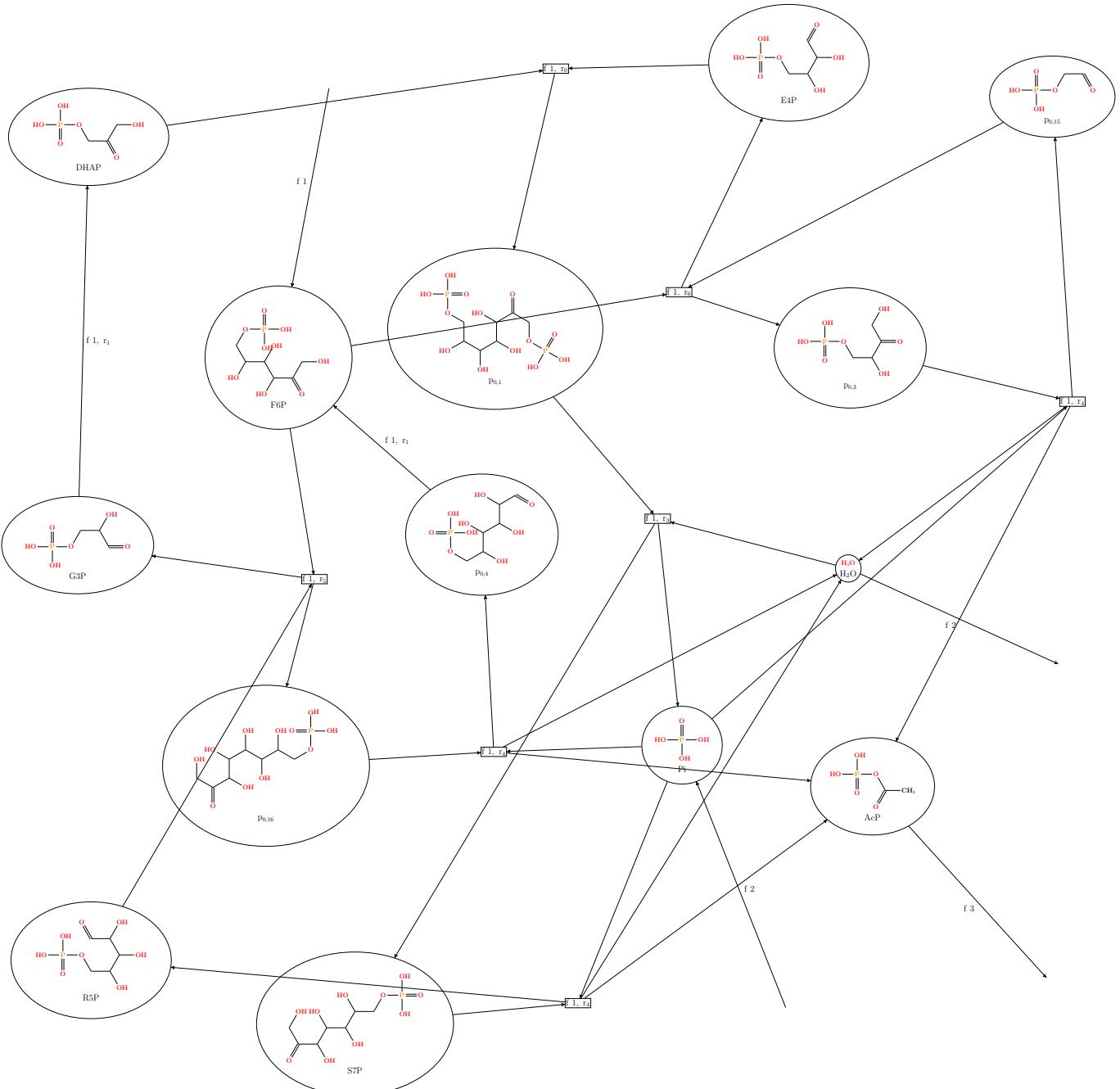
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



$$|E|=9 \quad |P|=9$$

0.18.9 Solution 43

Overall Data

Objective value (integral): 9

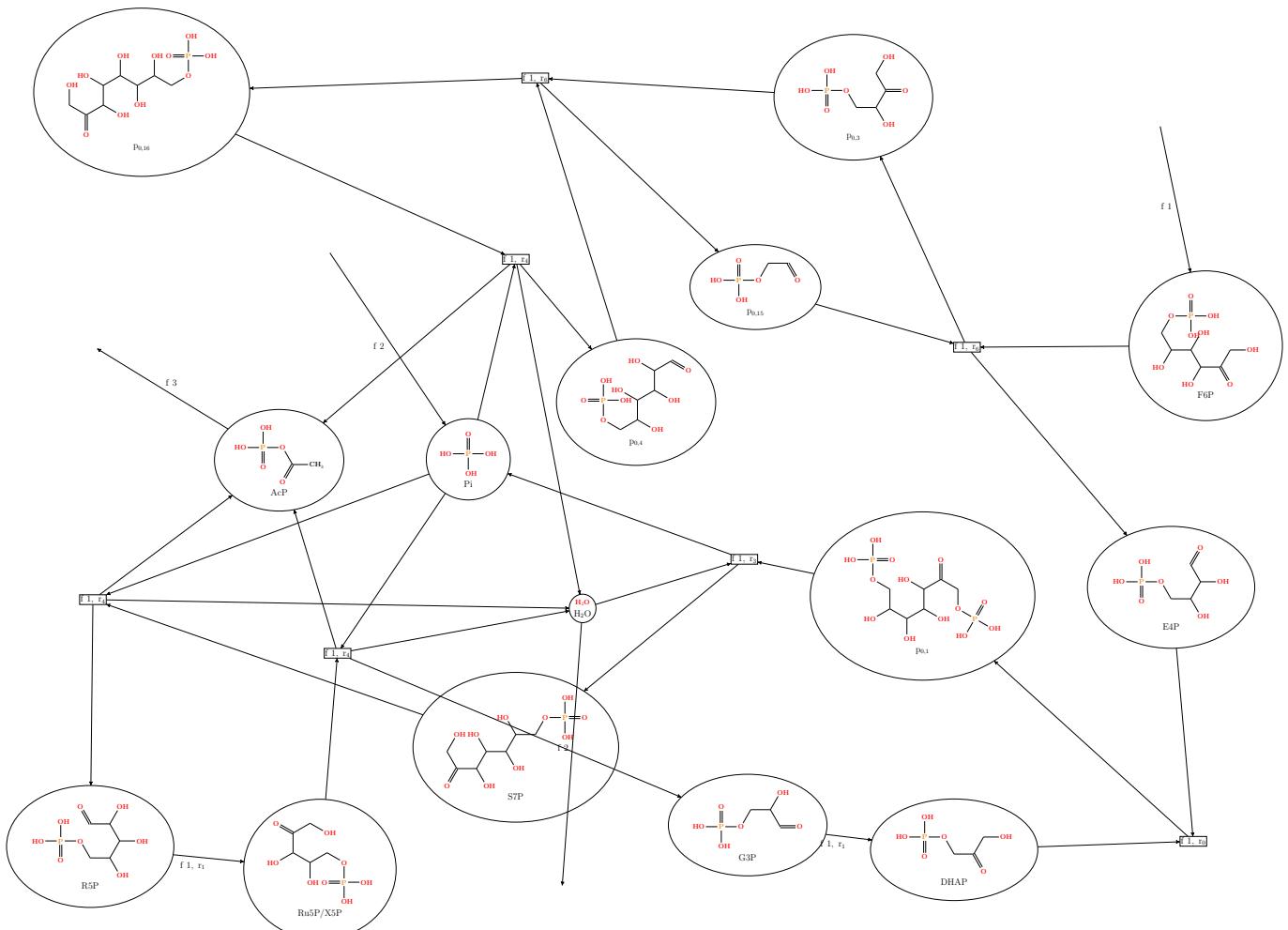
subjective value (in
Vertex/Graph In Out)

```

    AcP          0  3
    F6P          1  0
    H_20         0  2
    Pi           2  0

```

Filtered Graph



File: out/654_dg_0_11100_f_0_43_filt

$$|E| = 9 \quad |P| = 9$$

0.18.10 Solution 44

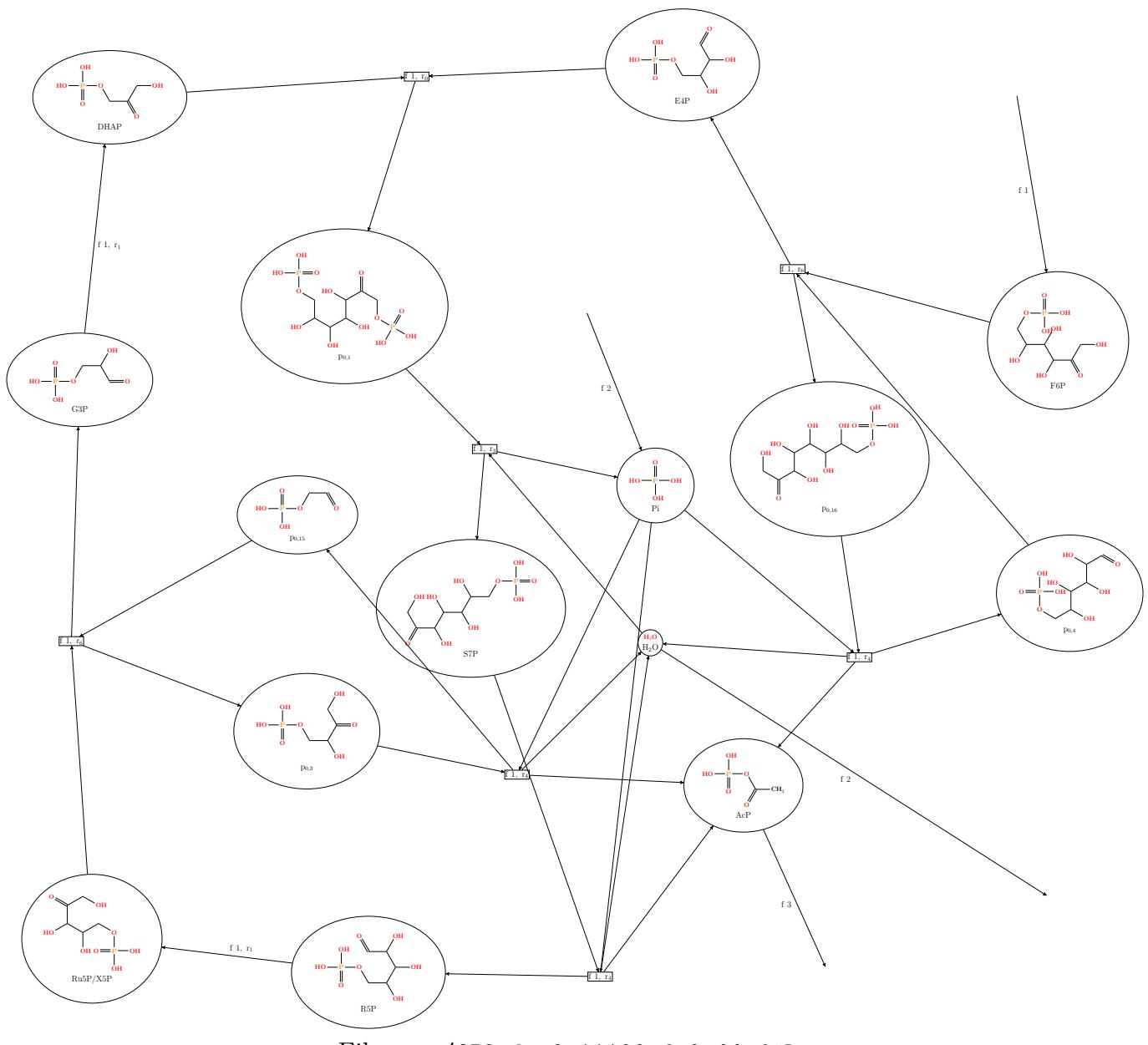
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/659_dg_0_11100_f_0_44_filt

$$|E| = 9 \quad |P| = 9$$

0.18.11 Solution 45

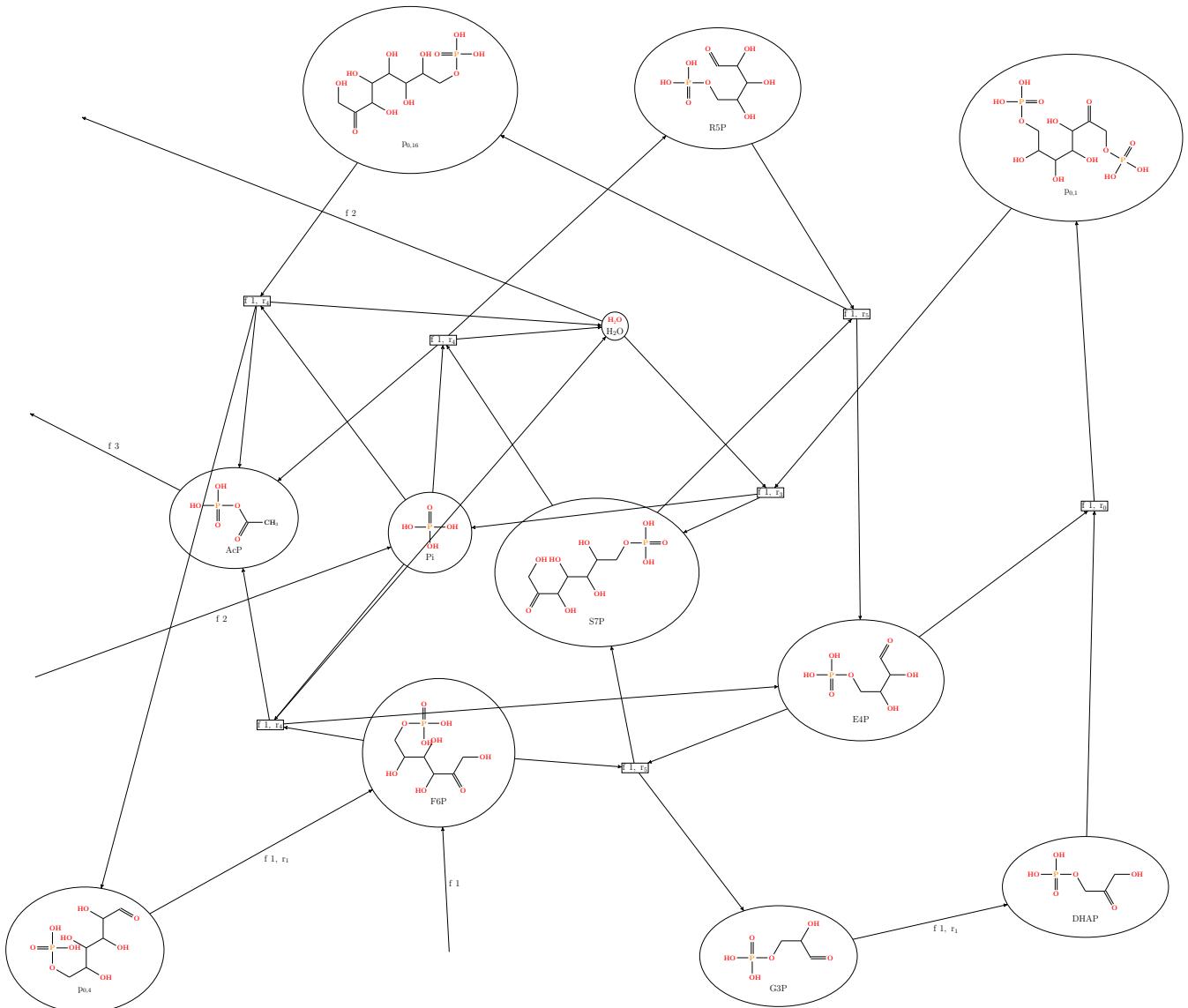
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/664_dg_0_11100_f_0_45_filt

$$|E| = 9 \quad |P| = 9$$

0.18.12 Solution 46

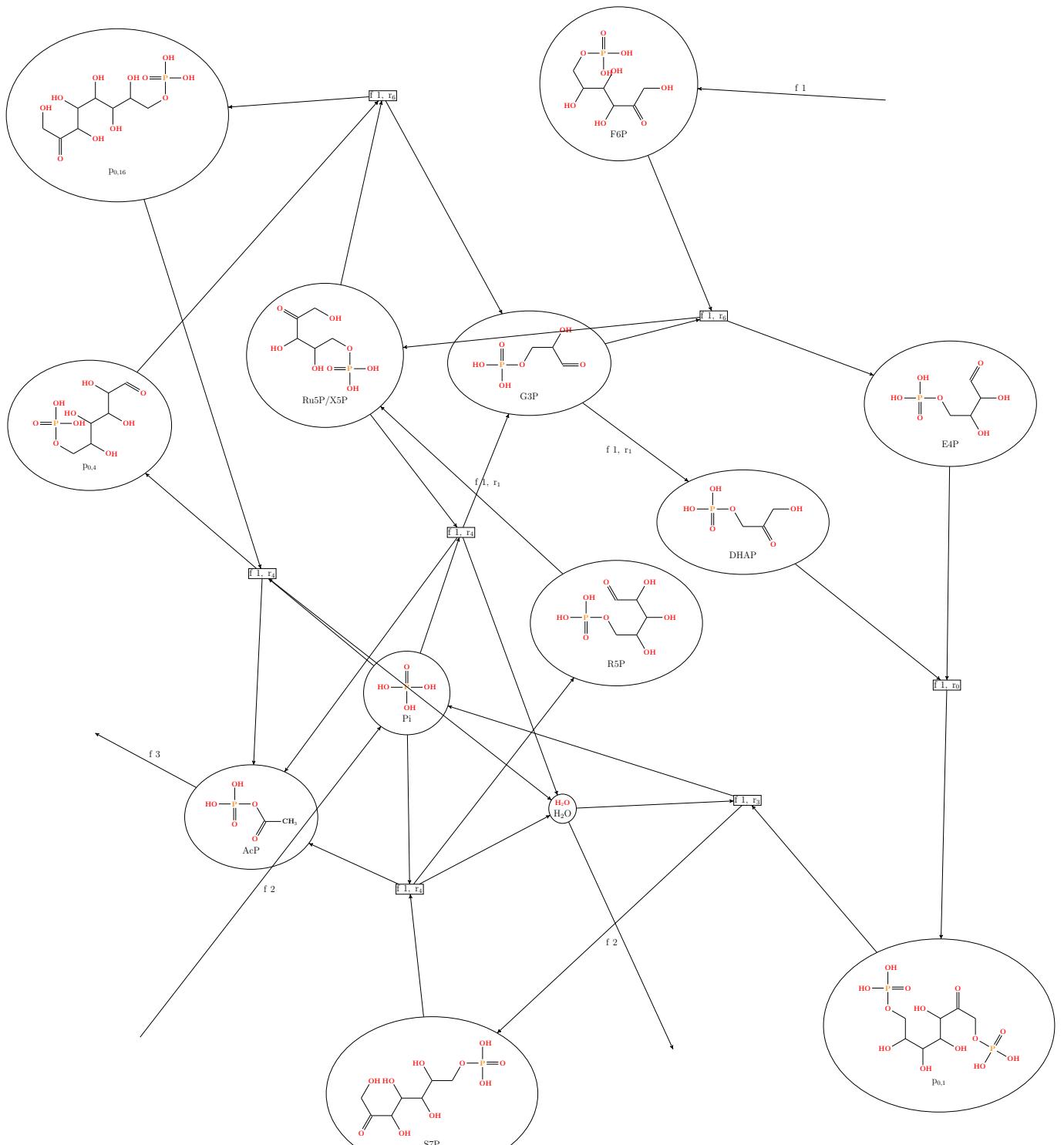
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/669_dg_0_11100_f_0_46_filt

$$|E| = 9 \quad |P| = 9$$

0.18.13 Solution 48

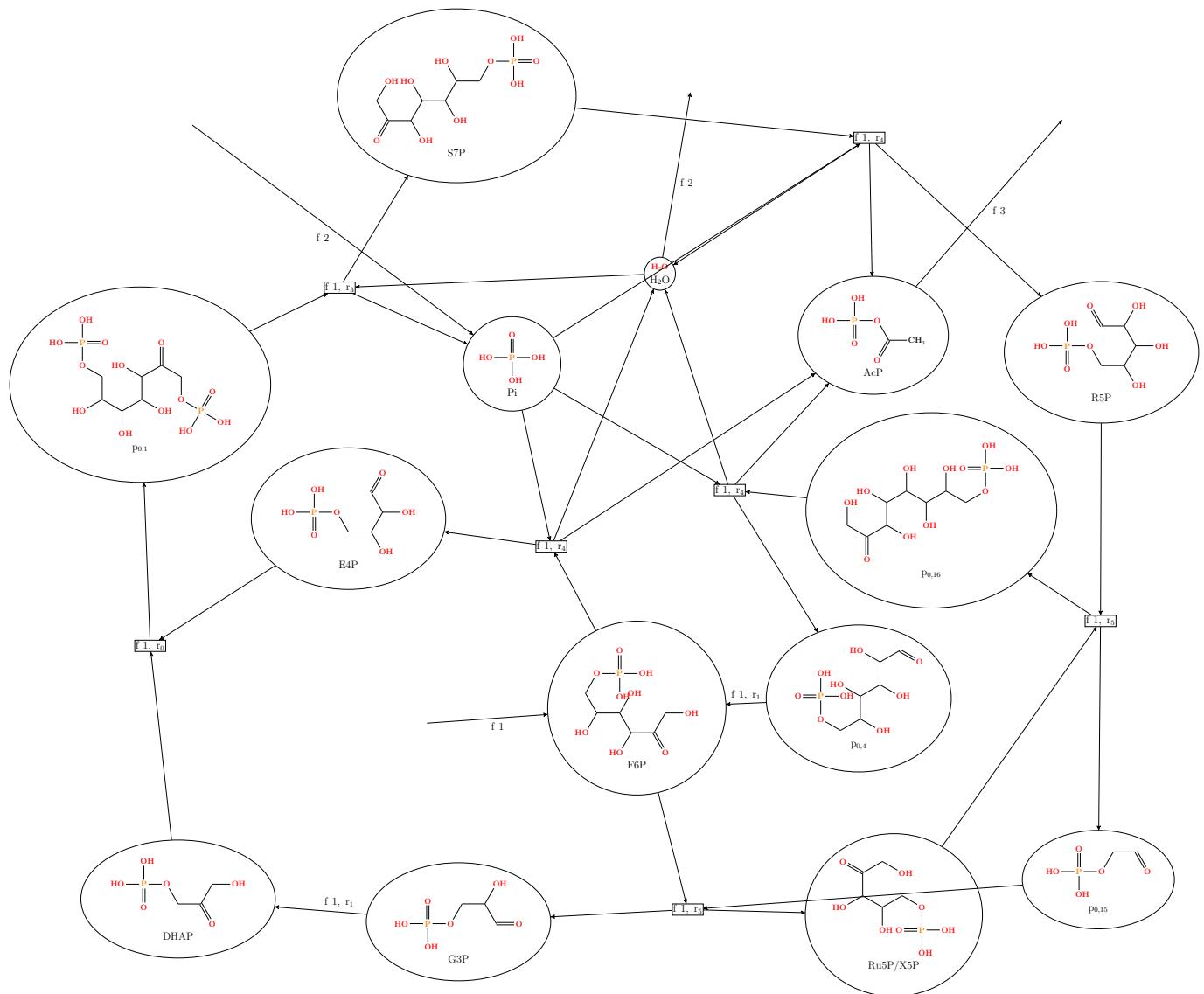
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/674_dg_0_11100_f_0_48_filt

$$|E| = 9 \quad |P| = 9$$

0.18.14 Solution 50

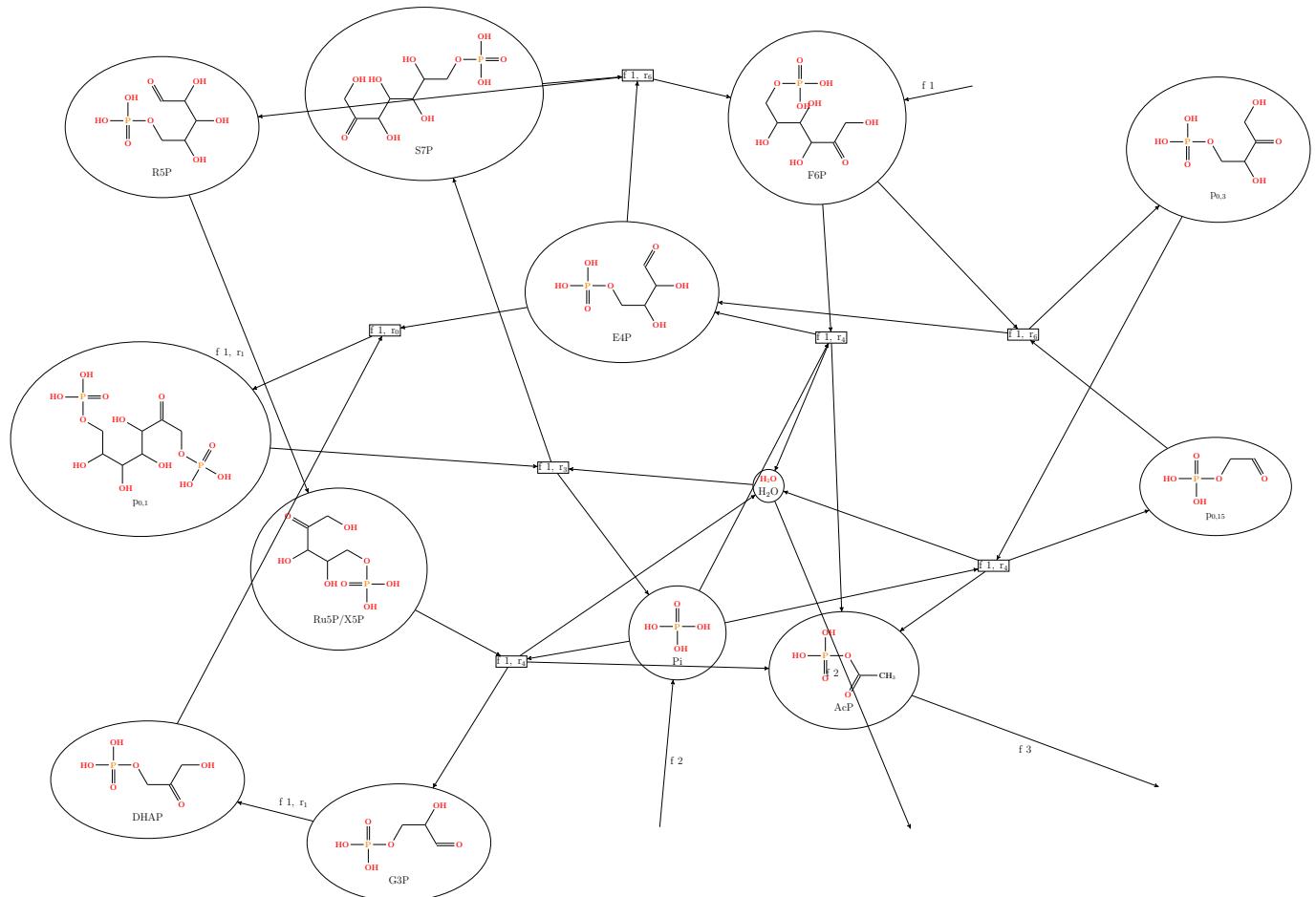
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2

Filtered Graph



File: out/679_dg_0_11100_f_0_50_filt

$$|E| = 9 \quad |P| = 9$$

0.18.15 Solution 51

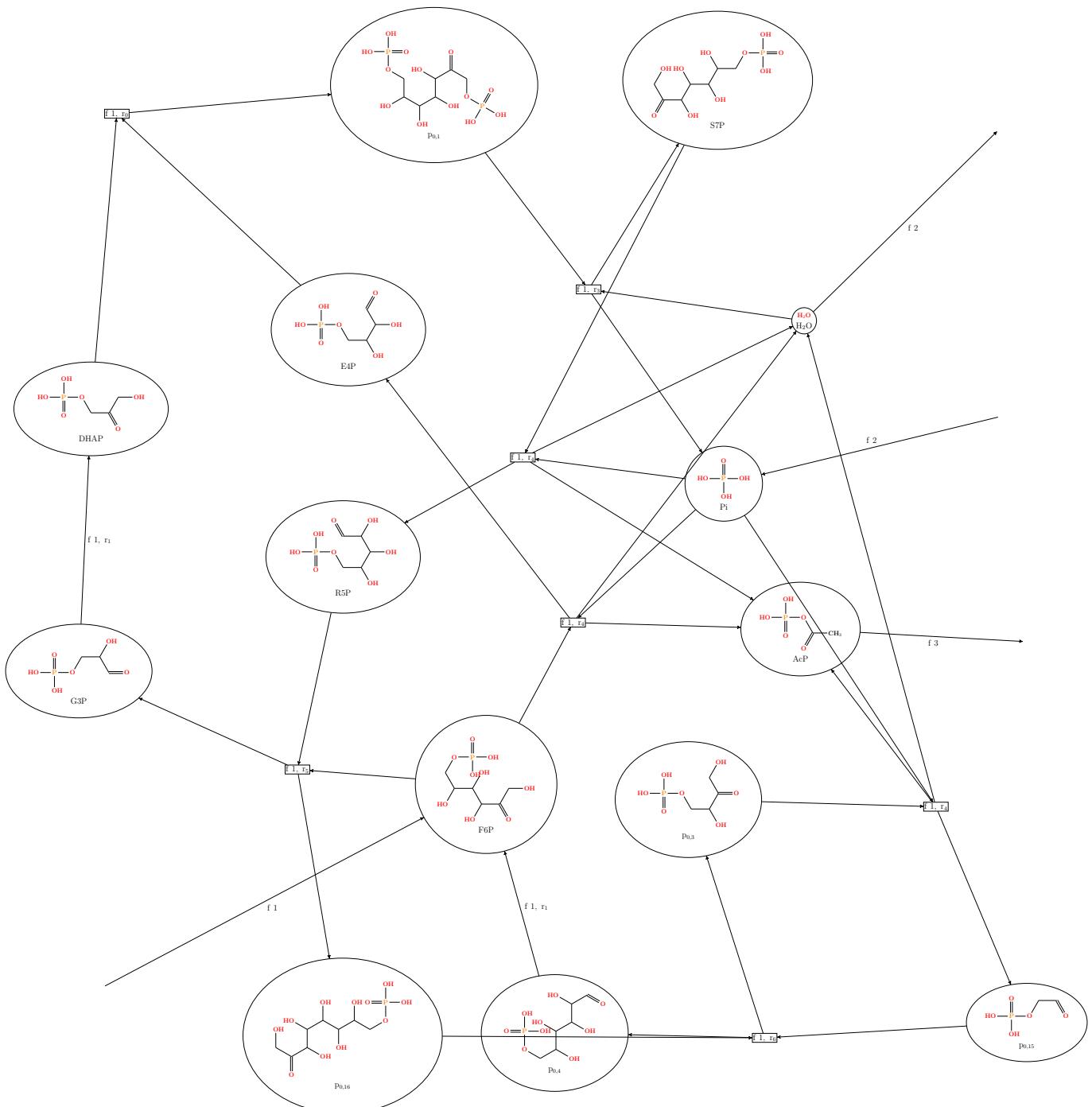
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/684_dg_0_11100_f_0_51_filt

$$|E| = 9 \quad |P| = 9$$

0.18.16 Solution 52

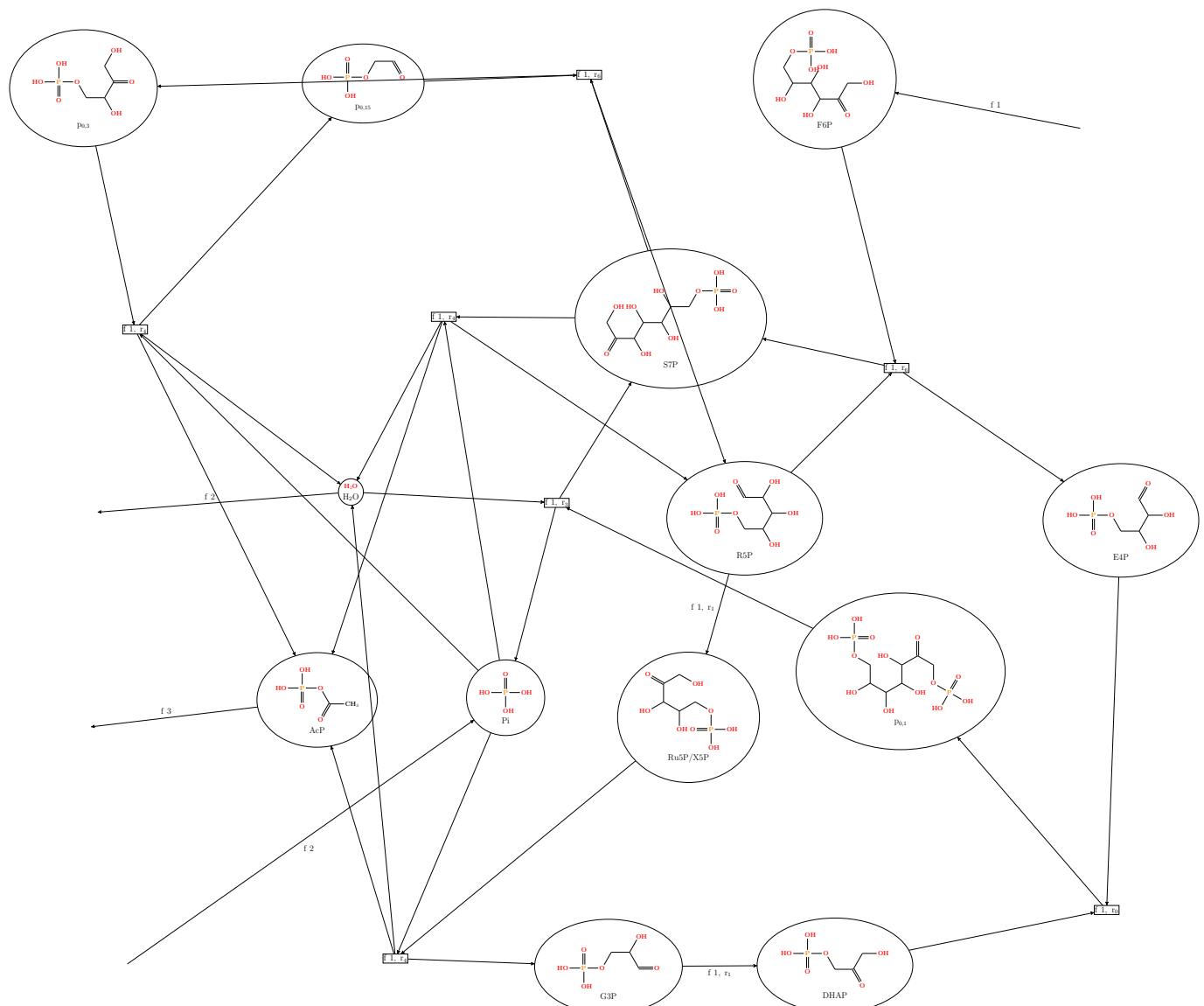
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2

Filtered Graph



File: out/689_dg_0_11100_f_0_52_filt

$$|E| = 9 \quad |P| = 9$$

0.18.17 Solution 53

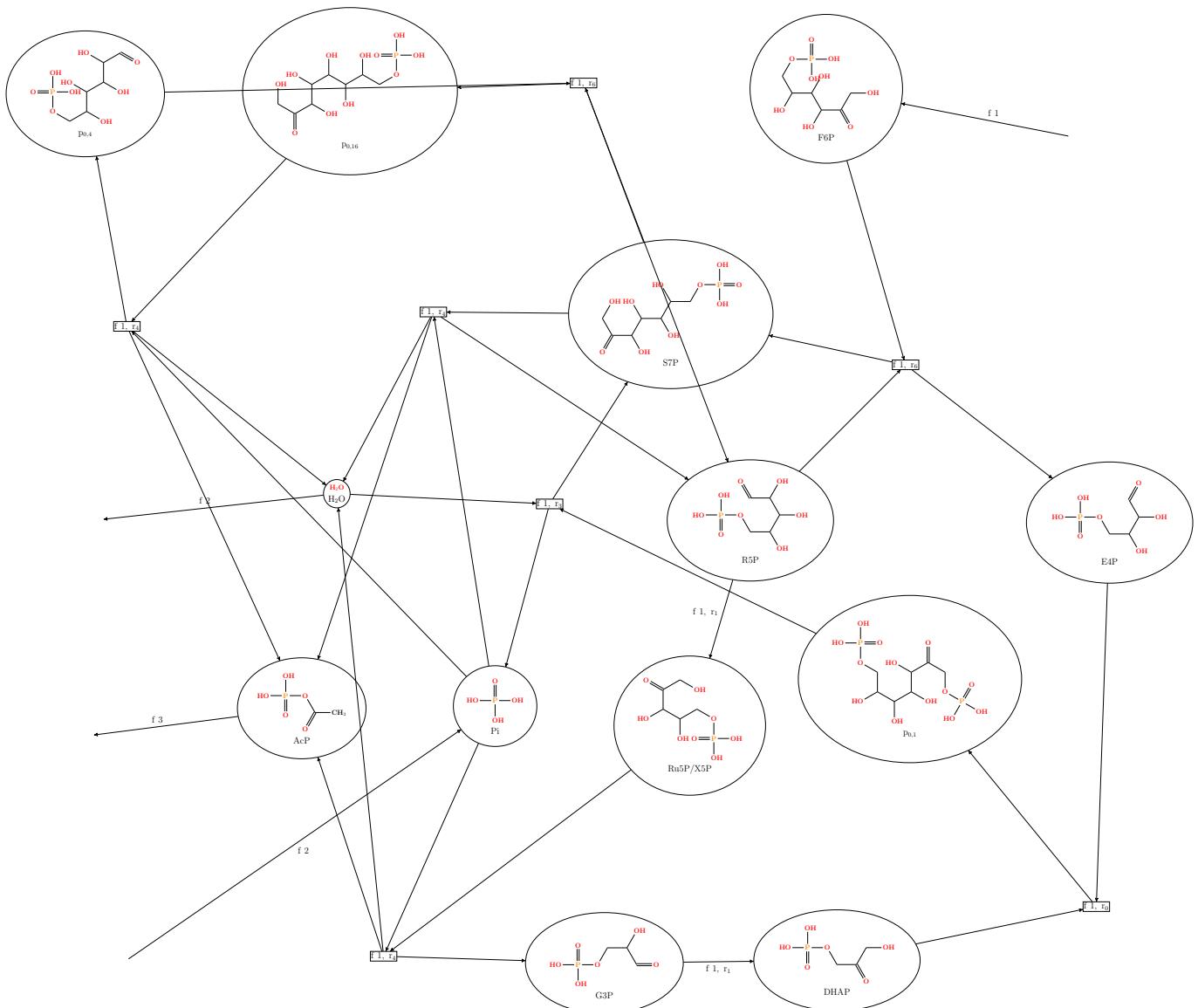
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/694_dg_0_11100_f_0_53_filt

$$|E| = 9 \quad |P| = 9$$

0.18.18 Solution 55

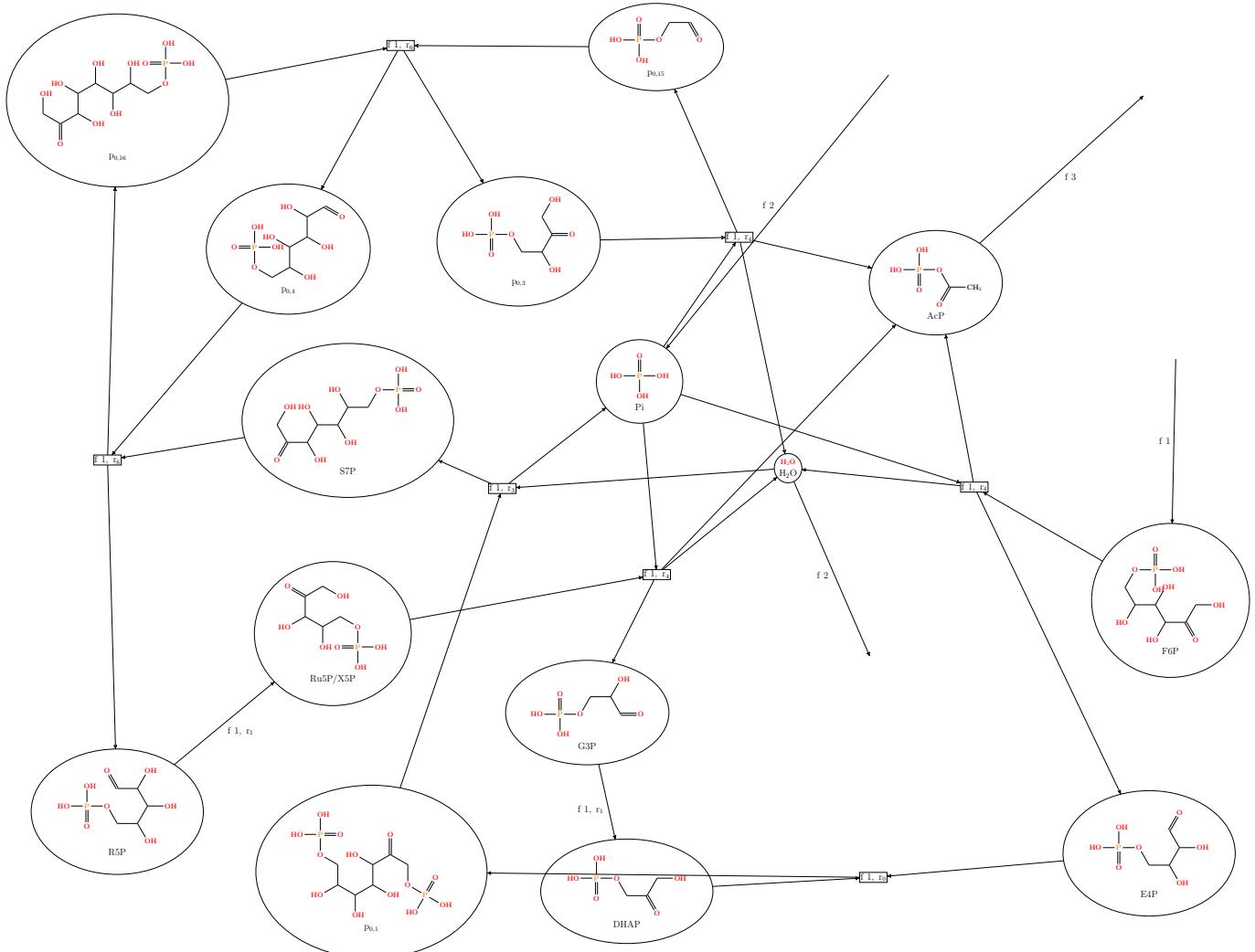
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/699_dg_0_11100_f_0_55_filt

$$|E| = 9 \quad |P| = 9$$

0.18.19 Solution 57

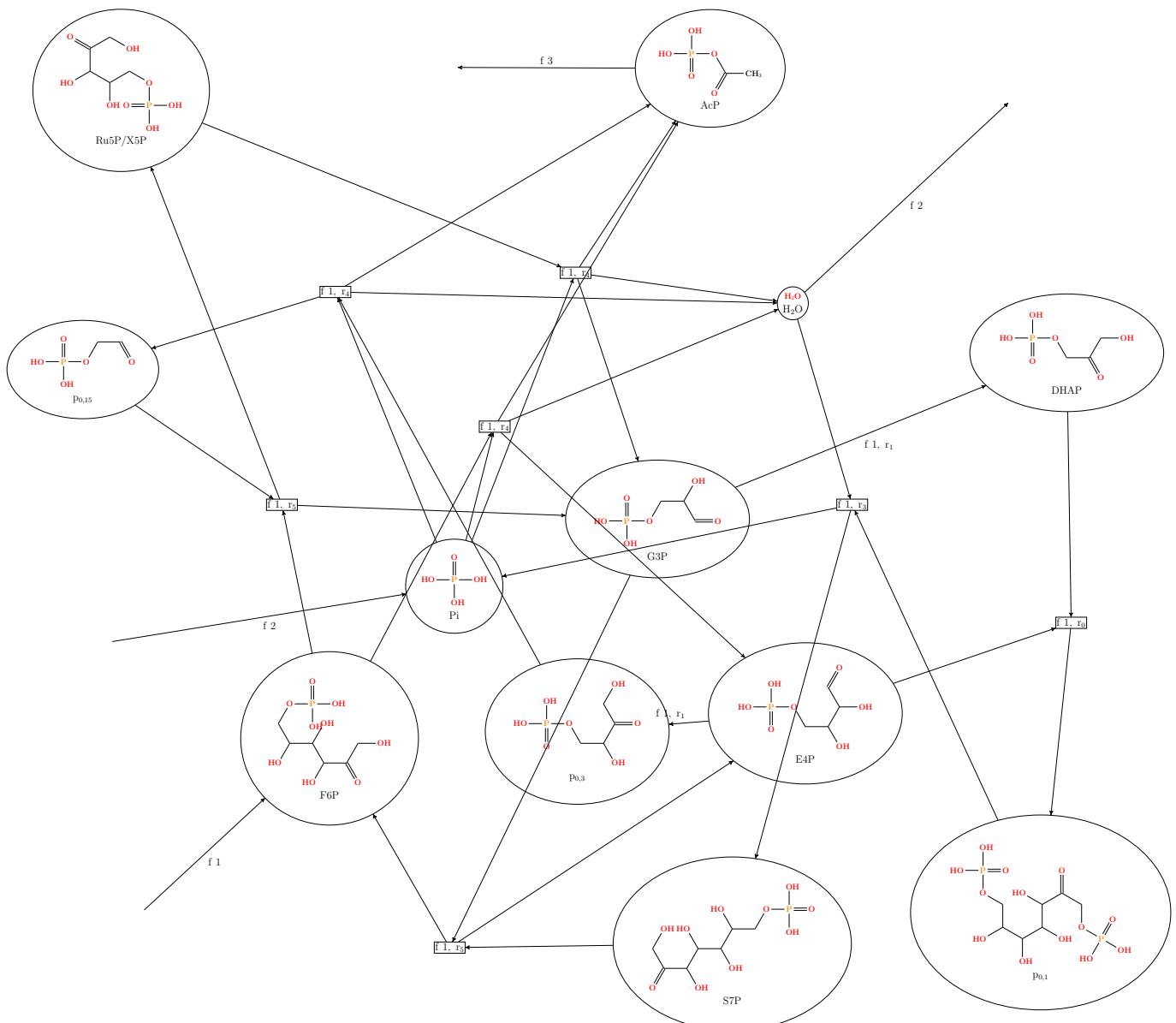
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/704_dg_0_11100_f_0_57_filt

$$|E| = 9 \quad |P| = 9$$

0.18.20 Solution 60

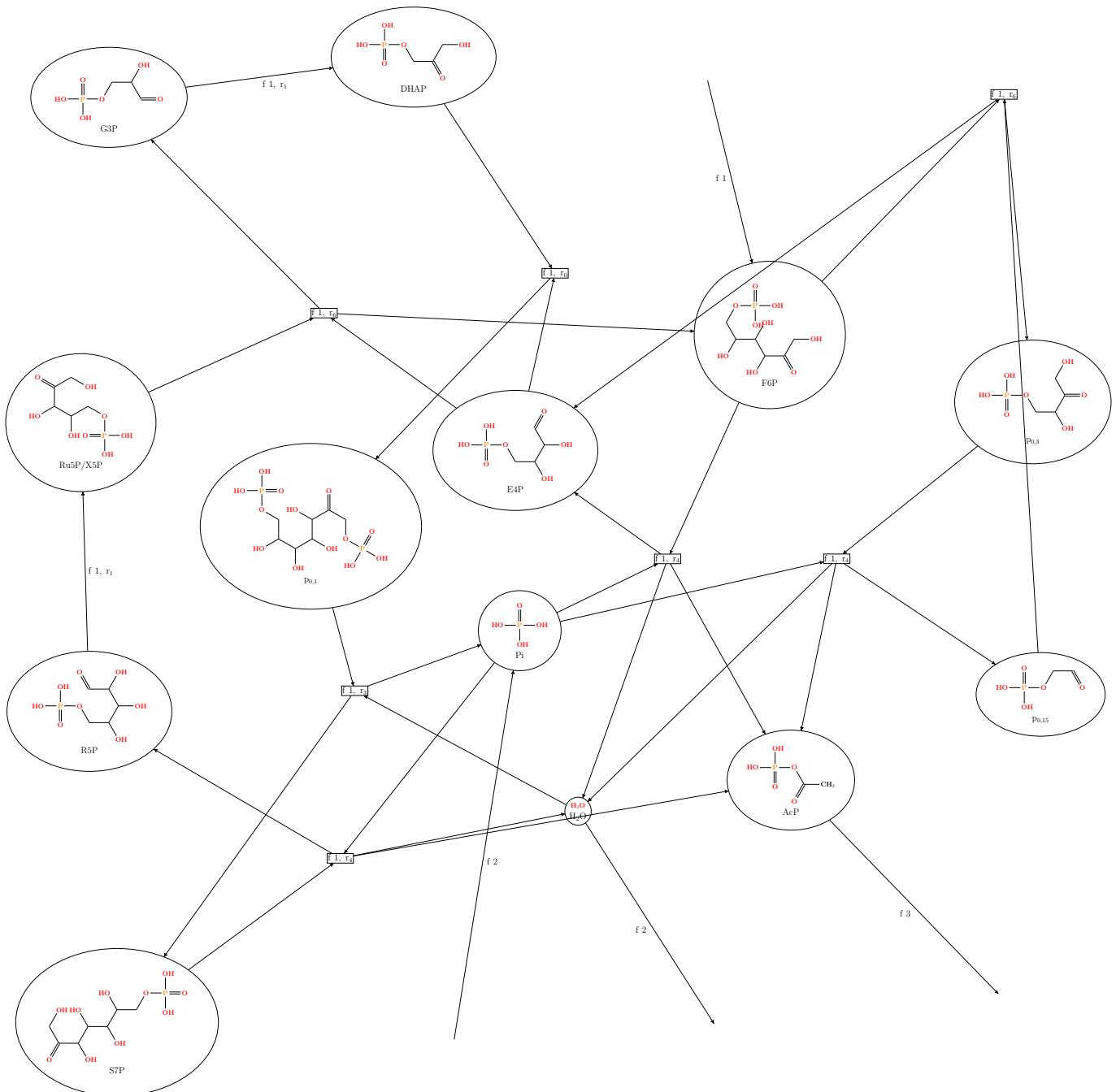
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/709_dg_0_11100_f_0_60_filt

$$|E| = 9 \quad |P| = 9$$

0.18.21 Solution 61

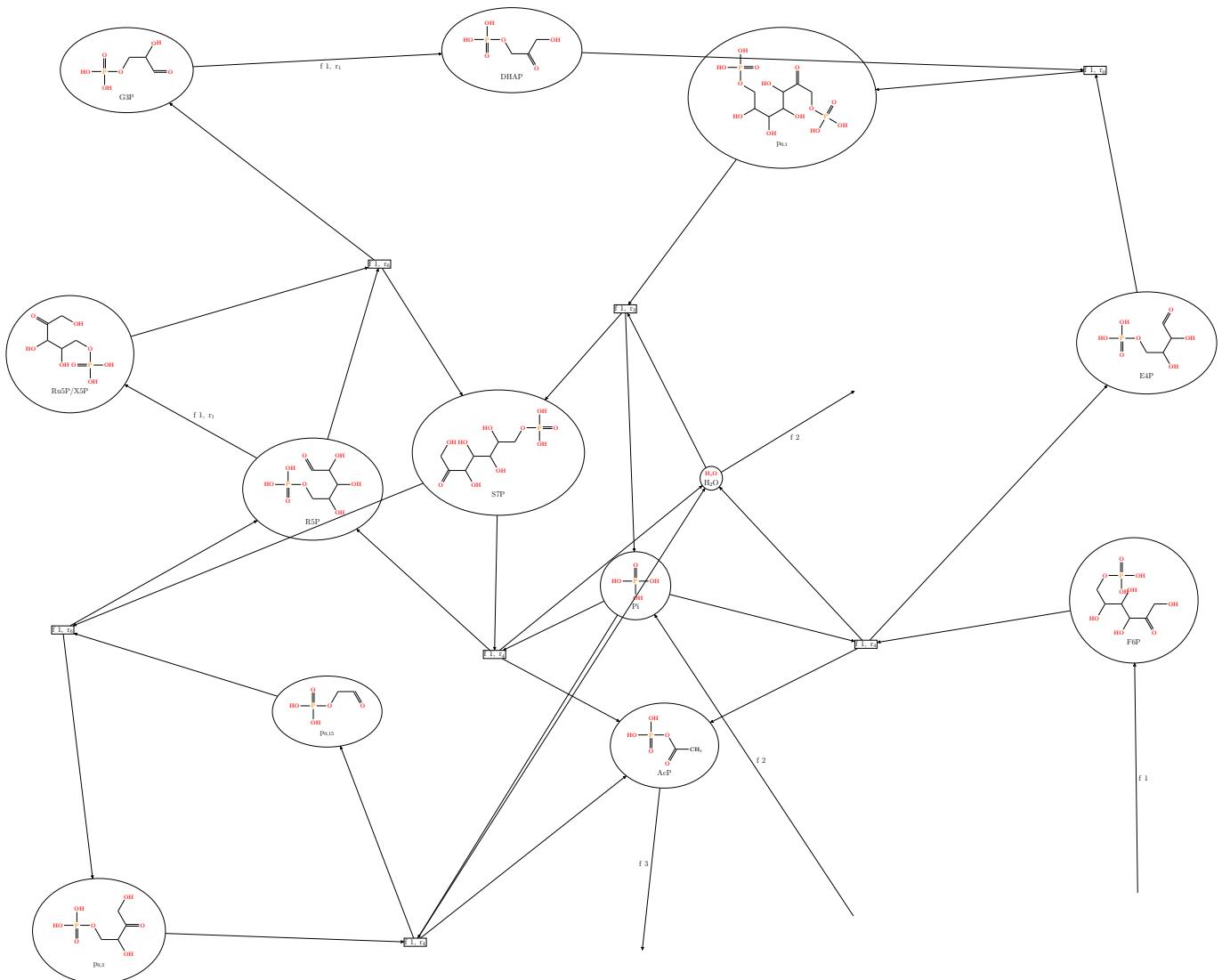
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/714_dg_0_11100_f_0_61_filt

$$|E| = 9 \quad |P| = 9$$

0.18.22 Solution 62

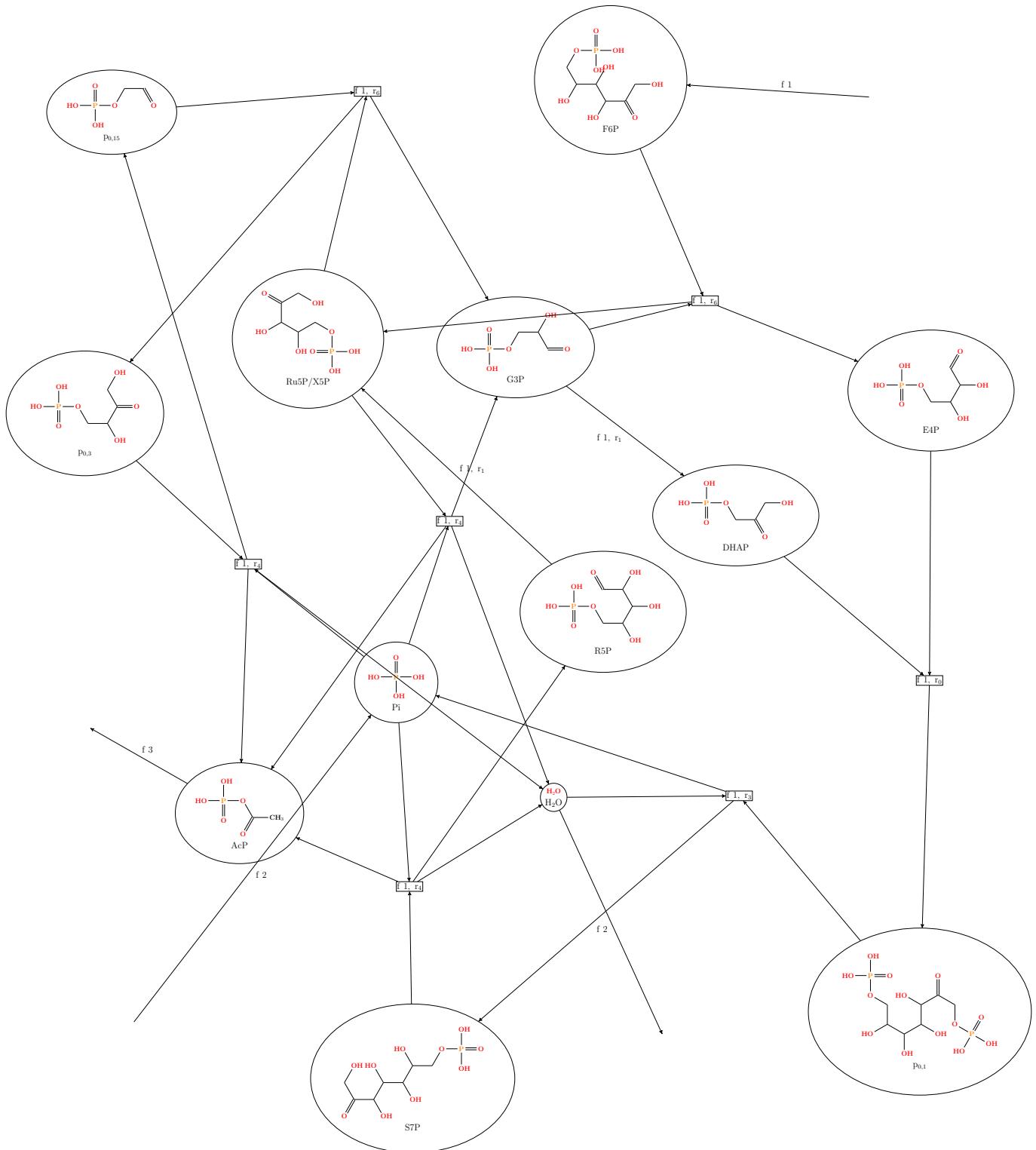
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/719_dg_0_11100_f_0_62_filt

$$|E| = 9 \quad |P| = 9$$

0.18.23 Solution 63

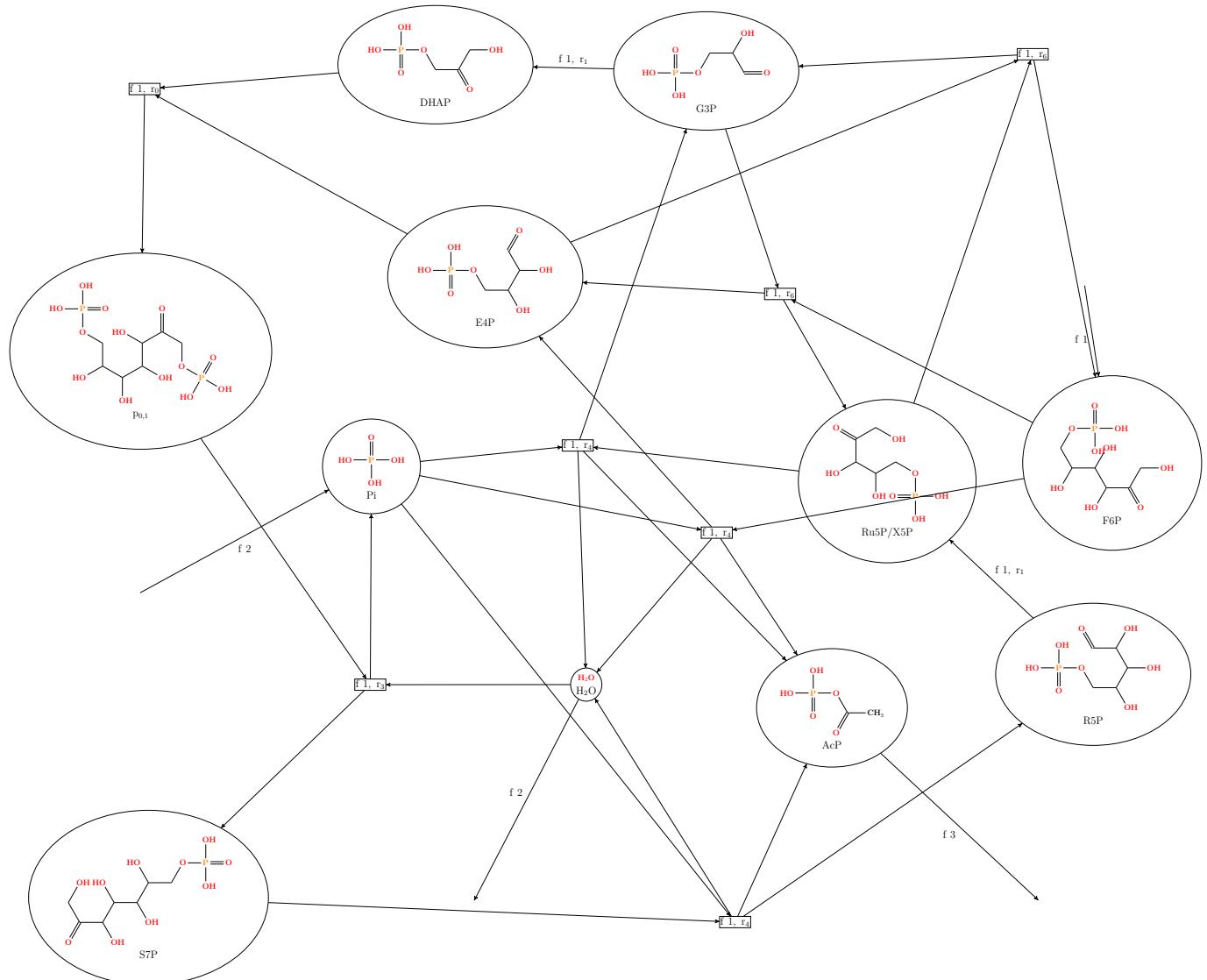
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/724_dg_0_11100_f_0_63_filt

$$|E| = 9 \quad |P| = 9$$

0.18.24 Solution 65

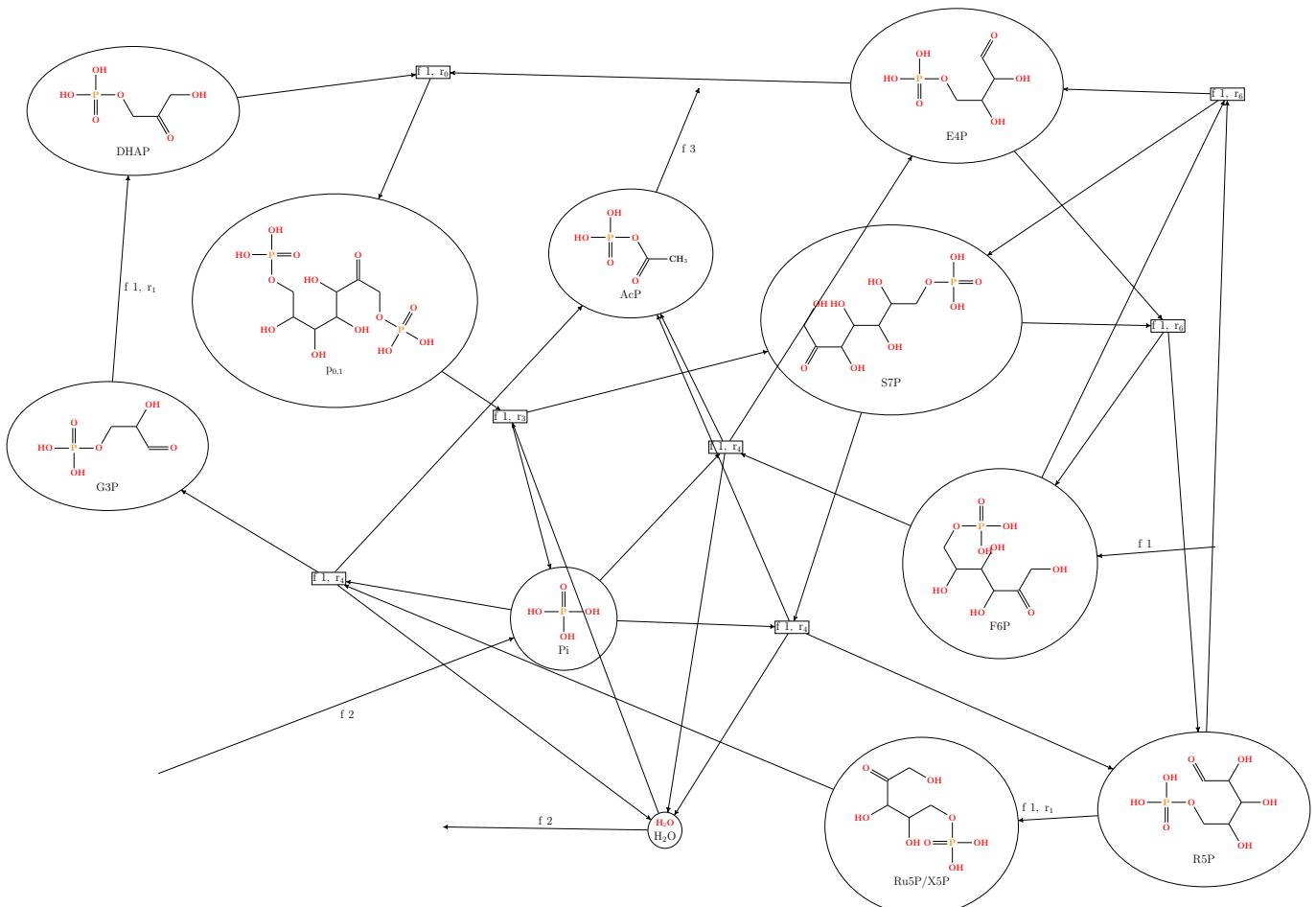
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/729_dg_0_11100_f_0_65_filt

$$|E| = 9 \quad |P| = 9$$

0.18.25 Solution 69

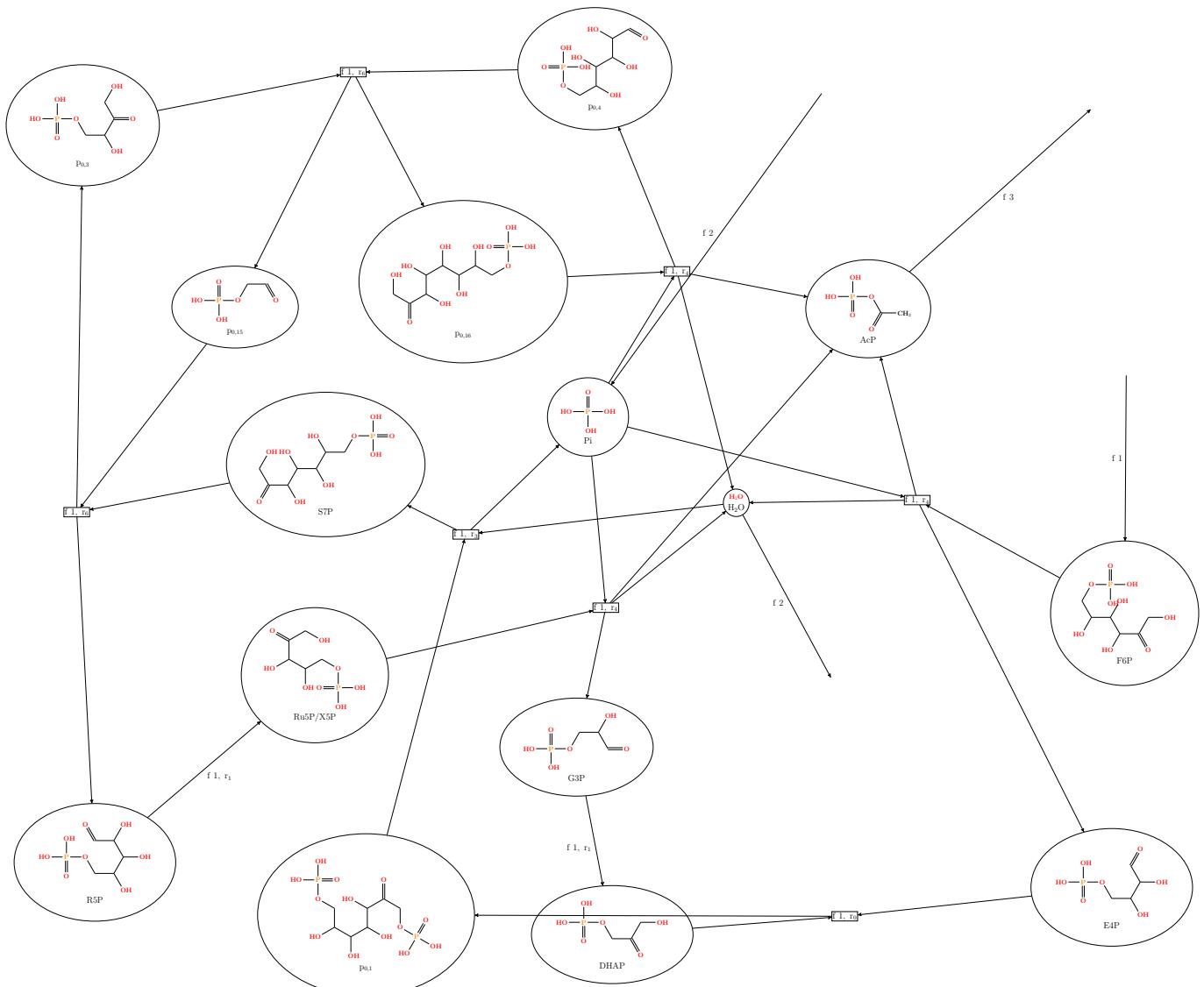
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/734_dg_0_11100_f_0_69_filt

$$|E| = 9 \quad |P| = 9$$

0.18.26 Solution 70

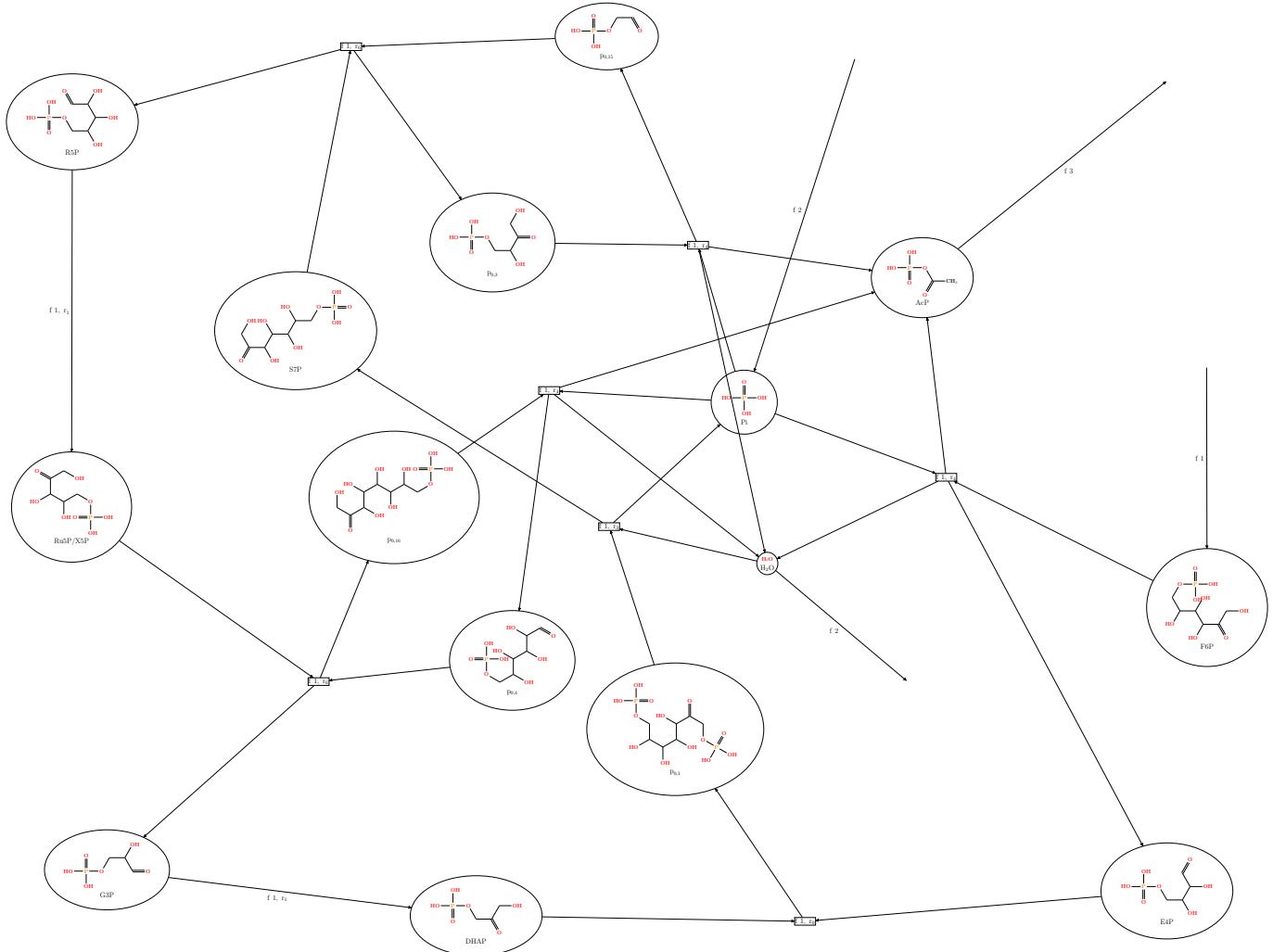
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/739_dg_0_11100_f_0_70_filt

$$|E| = 9 \quad |P| = 9$$

0.18.27 Solution 71

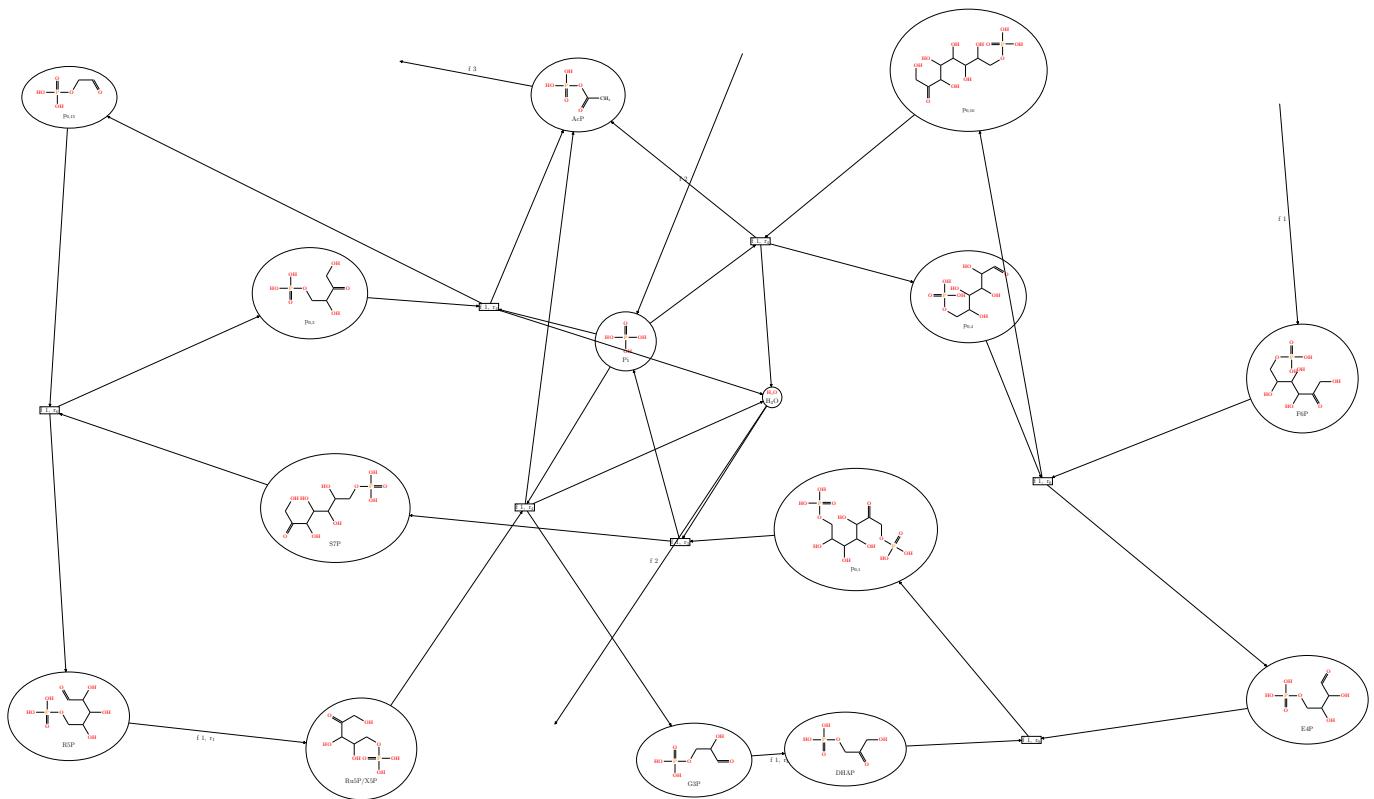
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/744_dg_0_11100_f_0_71_filt

$$|E| = 9 \quad |P| = 9$$

0.18.28 Solution 72

Overall Data

Objective value (integral): 9

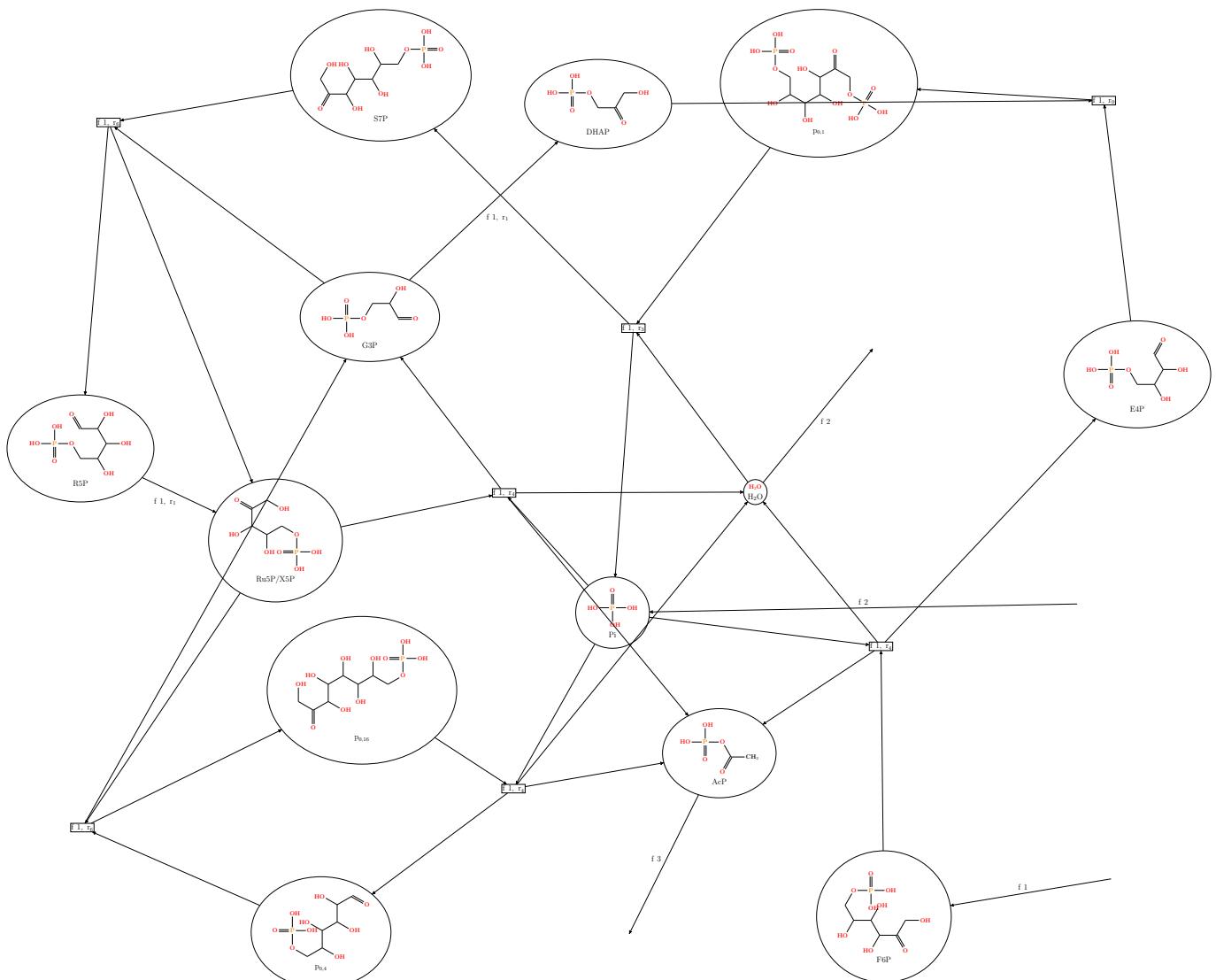
Vertex/Graph In Out

AcP 0 3

F6P 1 0

H_20 0 2

Filtered Graph



File: out/749_dg_0_11100_f_0_72_filt

$$|E| = 9 \quad |P| = 9$$

0.18.29 Solution 74

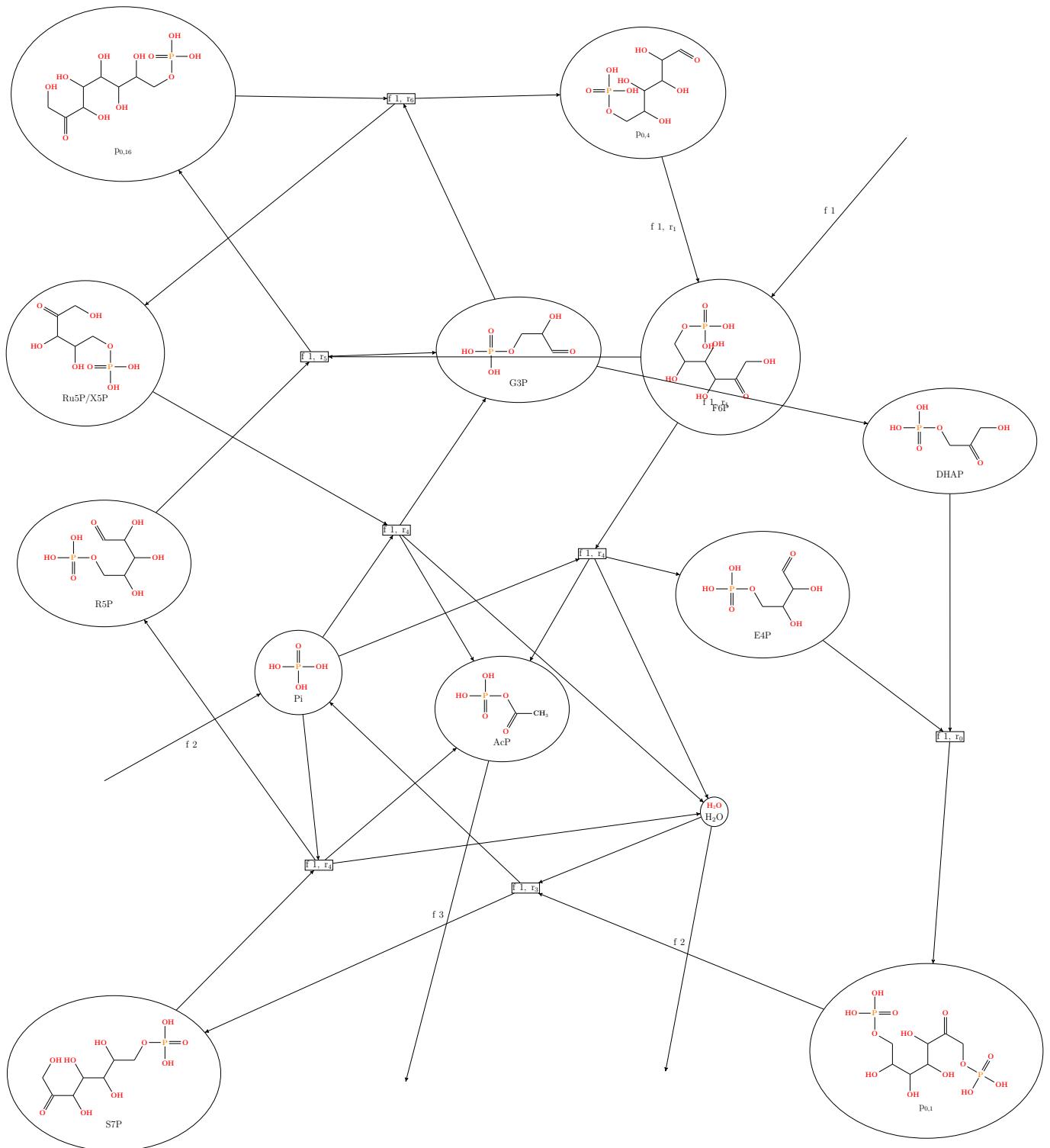
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/754_dg_0_11100_f_0_74_filt

$$|E| = 9 \quad |P| = 9$$

0.18.30 Solution 76

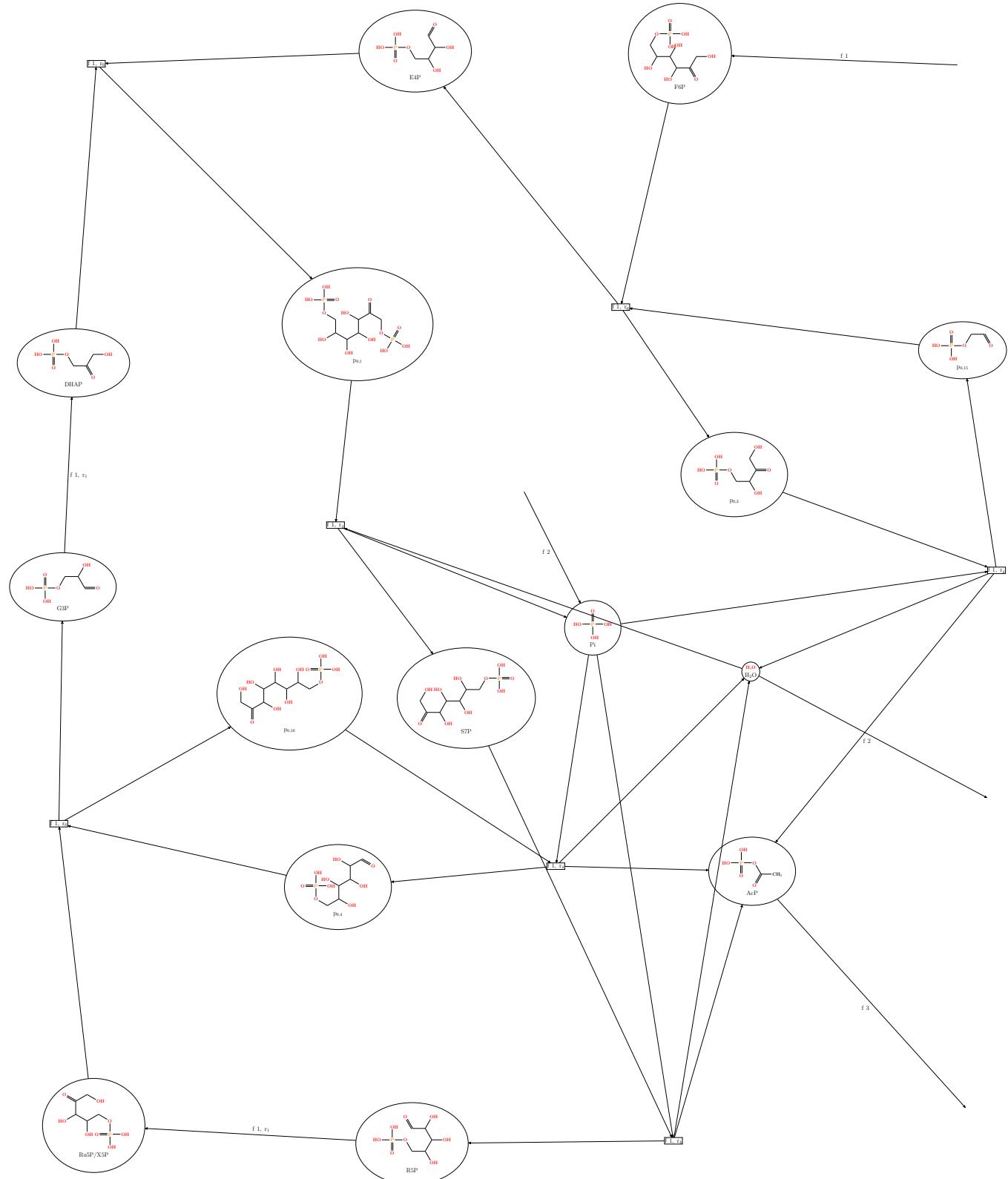
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/759 dg 0 11100 f 0 76 filt

$$|E| = 9 \quad |P| = 9$$

0.18.31 Solution 83

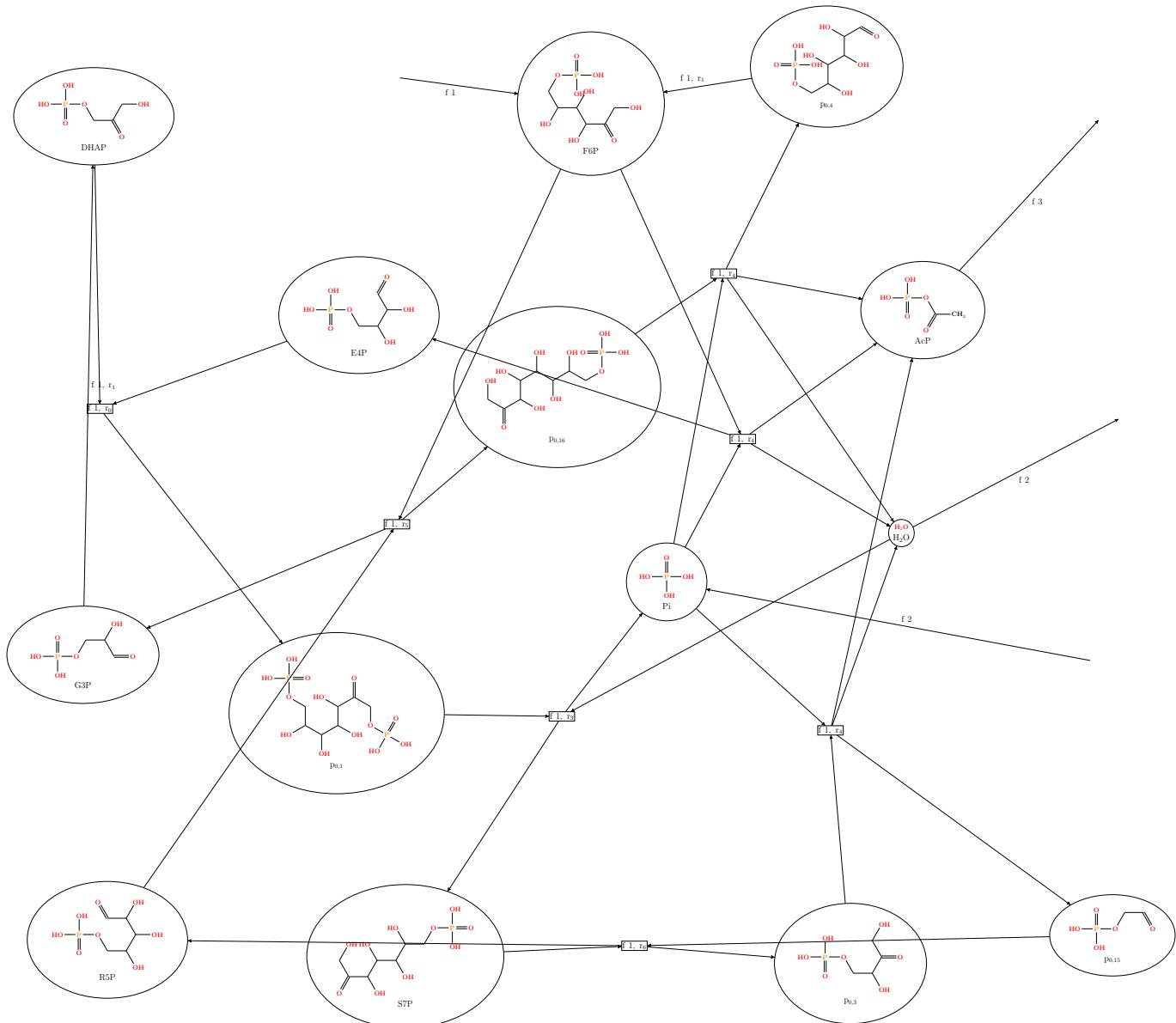
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/764_dg_0_11100_f_0_83_filt

$$|E| = 9 \quad |P| = 9$$

0.18.32 Solution 84

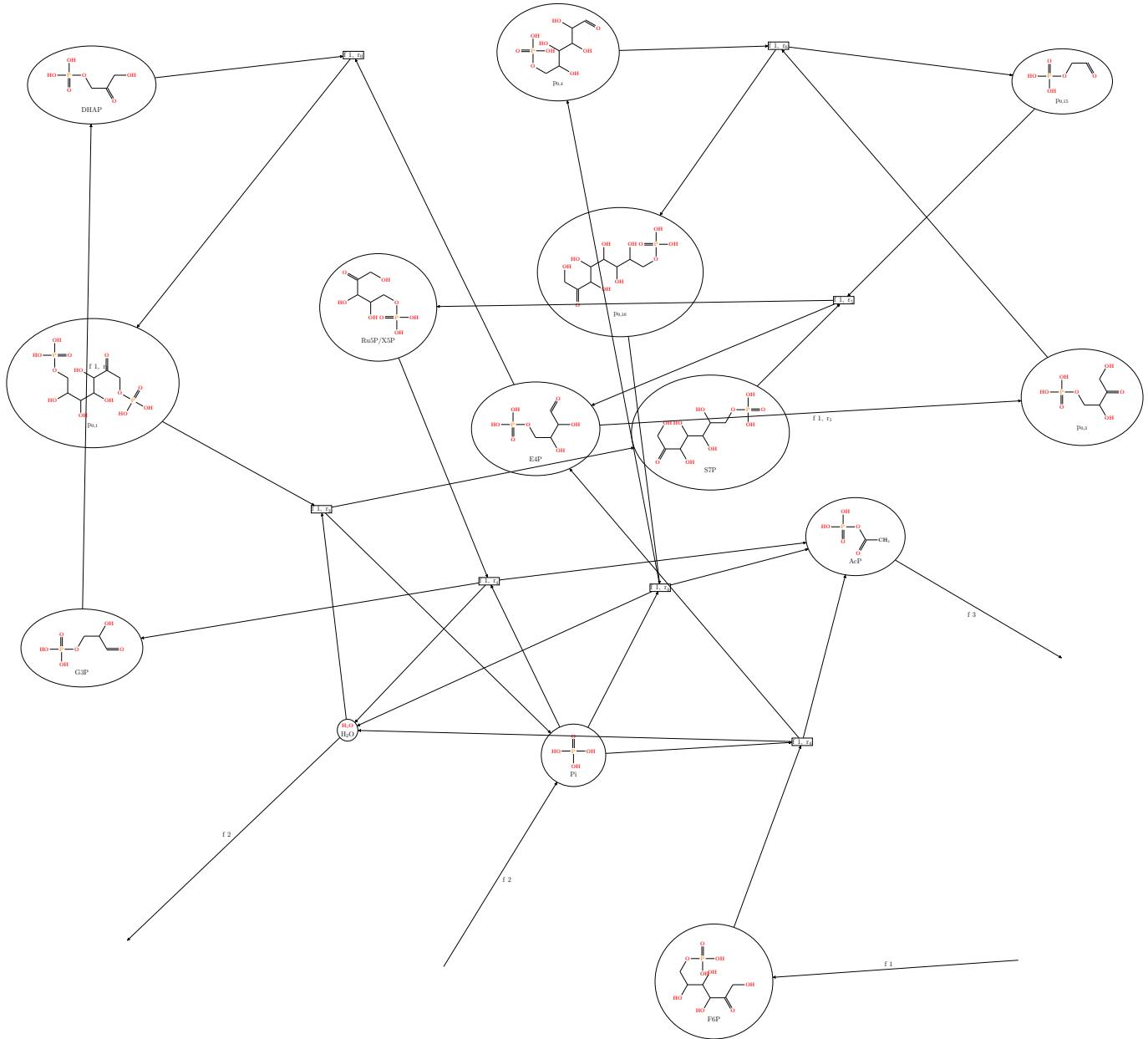
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/769_dg_0_11100_f_0_84_filt

$$|E| = 9 \quad |P| = 9$$

0.18.33 Solution 85

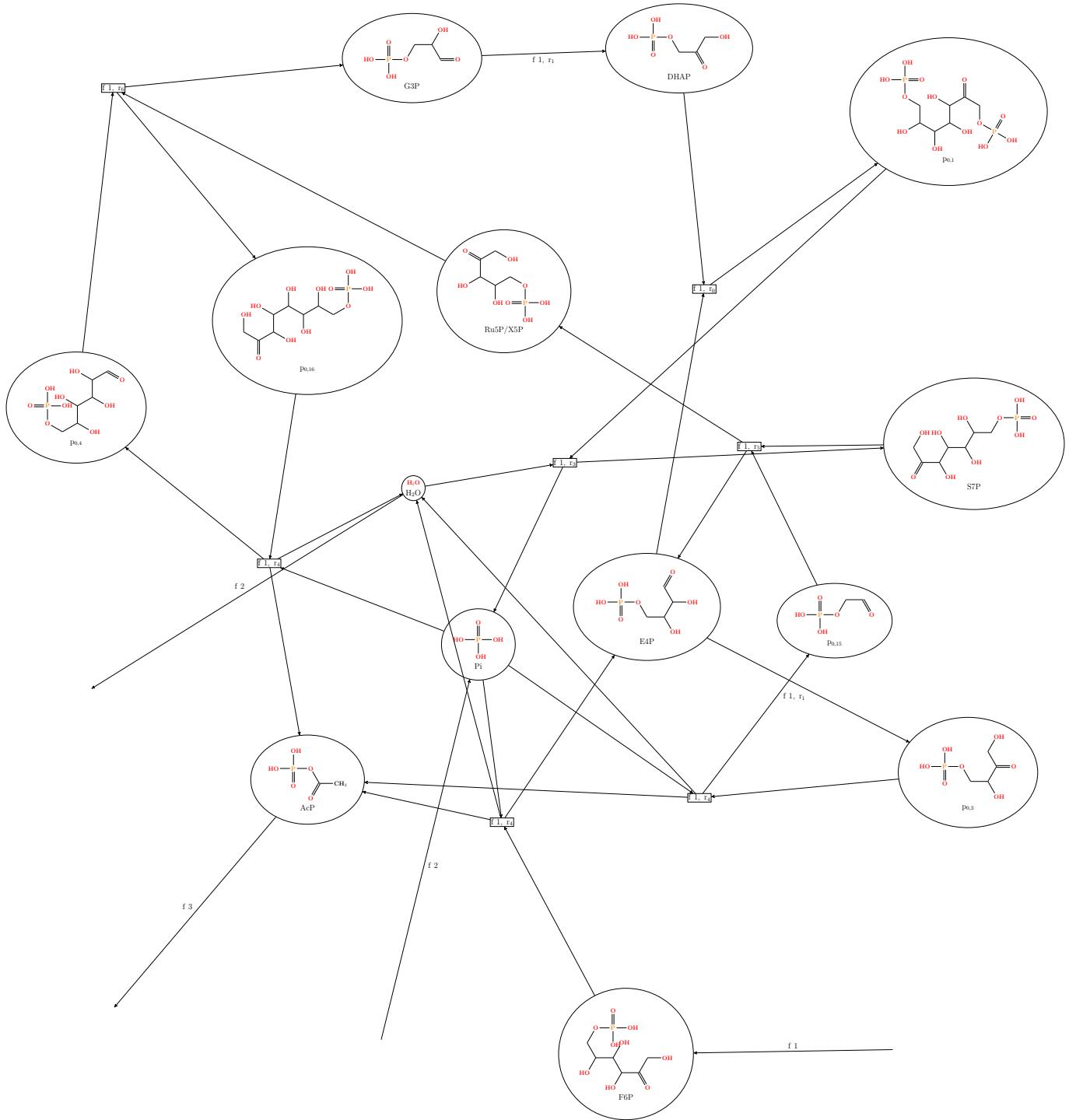
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/774_dg_0_11100_f_0_85_filt

$|E| = 9$ $|P| = 9$

0.18.34 Solution 86

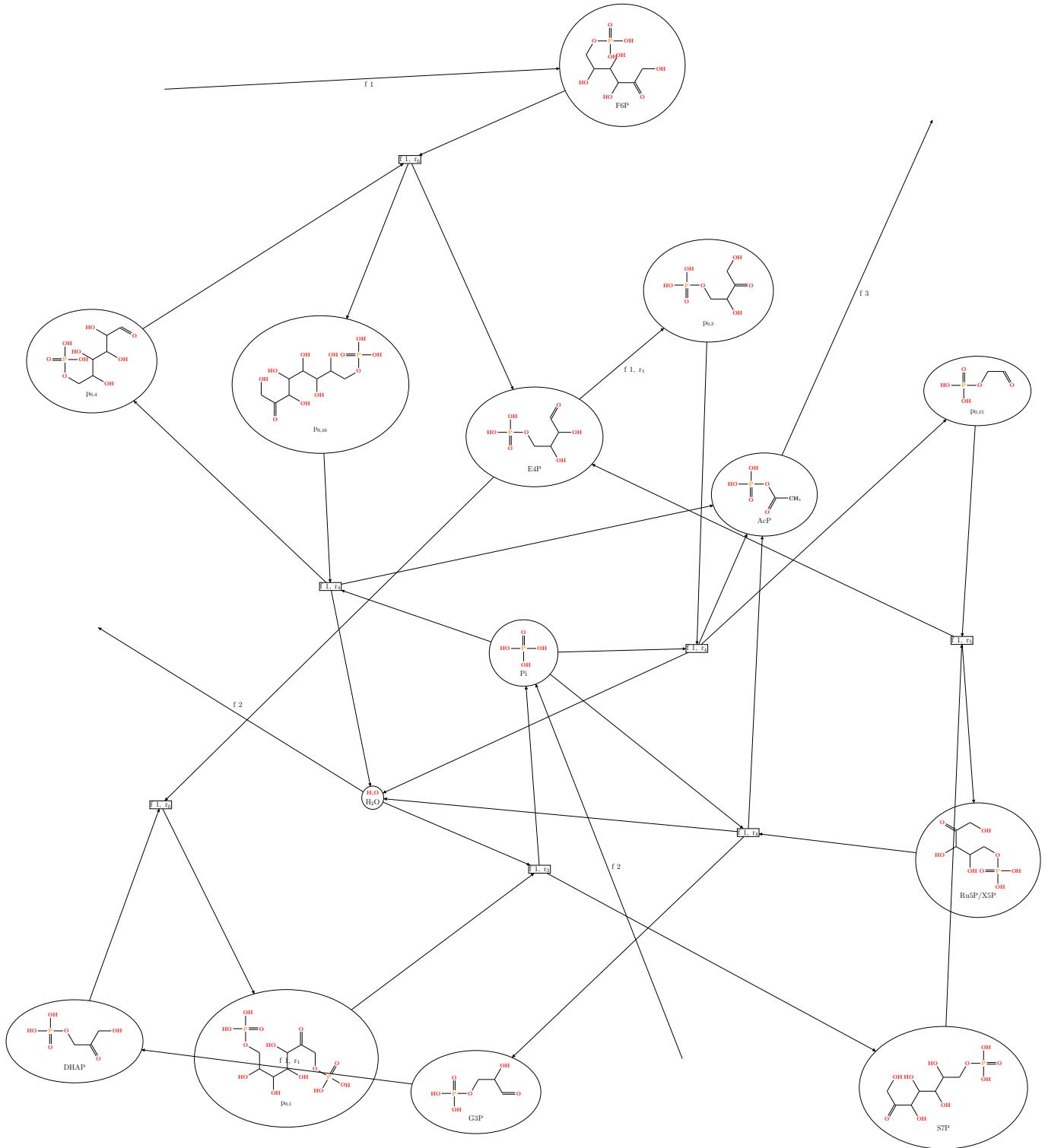
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/779_dg_0_11100_f_0_86_filt

$$|E| = 9 \quad |P| = 9$$

0.18.35 Solution 88

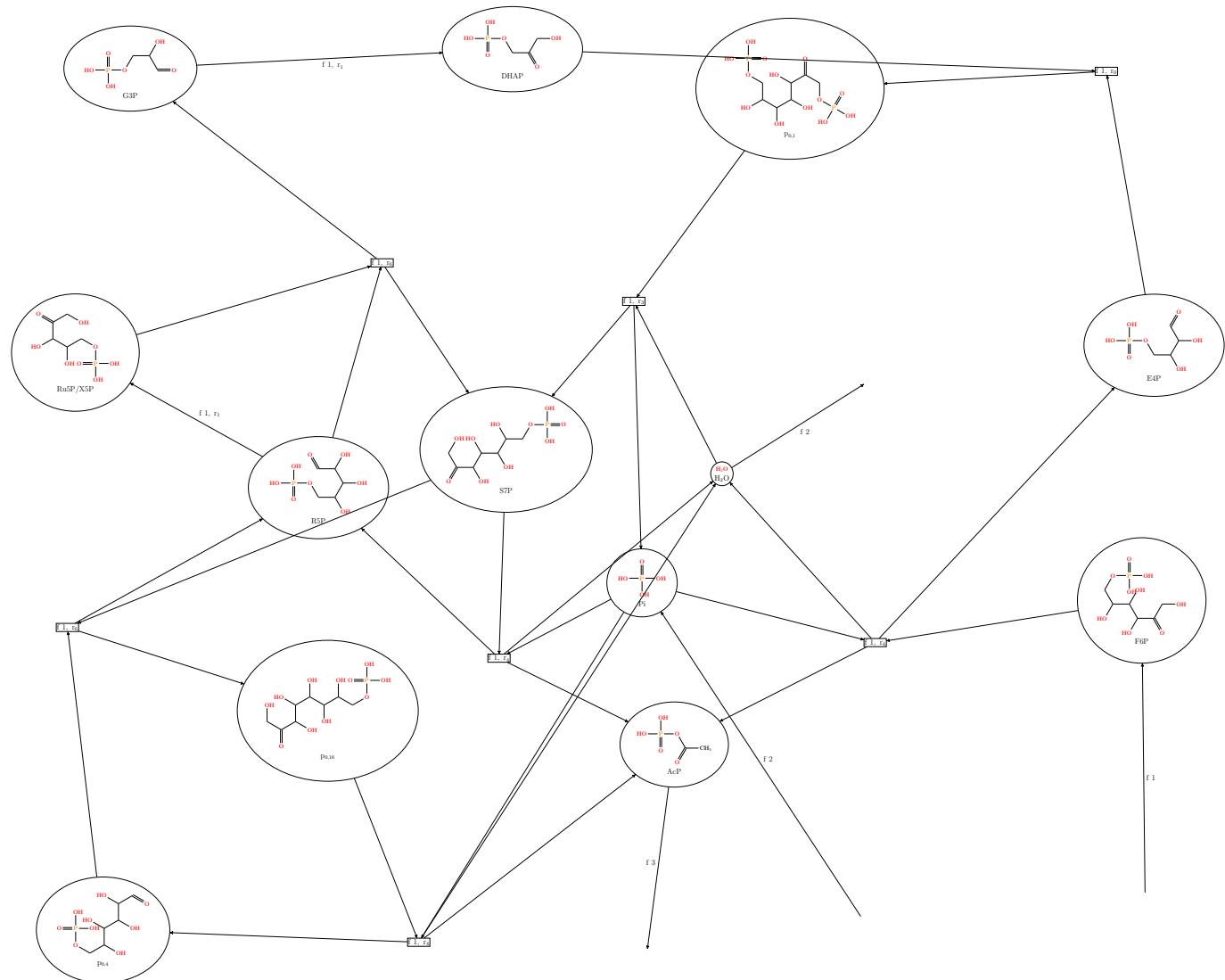
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/784_dg_0_11100_f_0_88_filt

$$|E| = 9 \quad |P| = 9$$

0.18.36 Solution 90

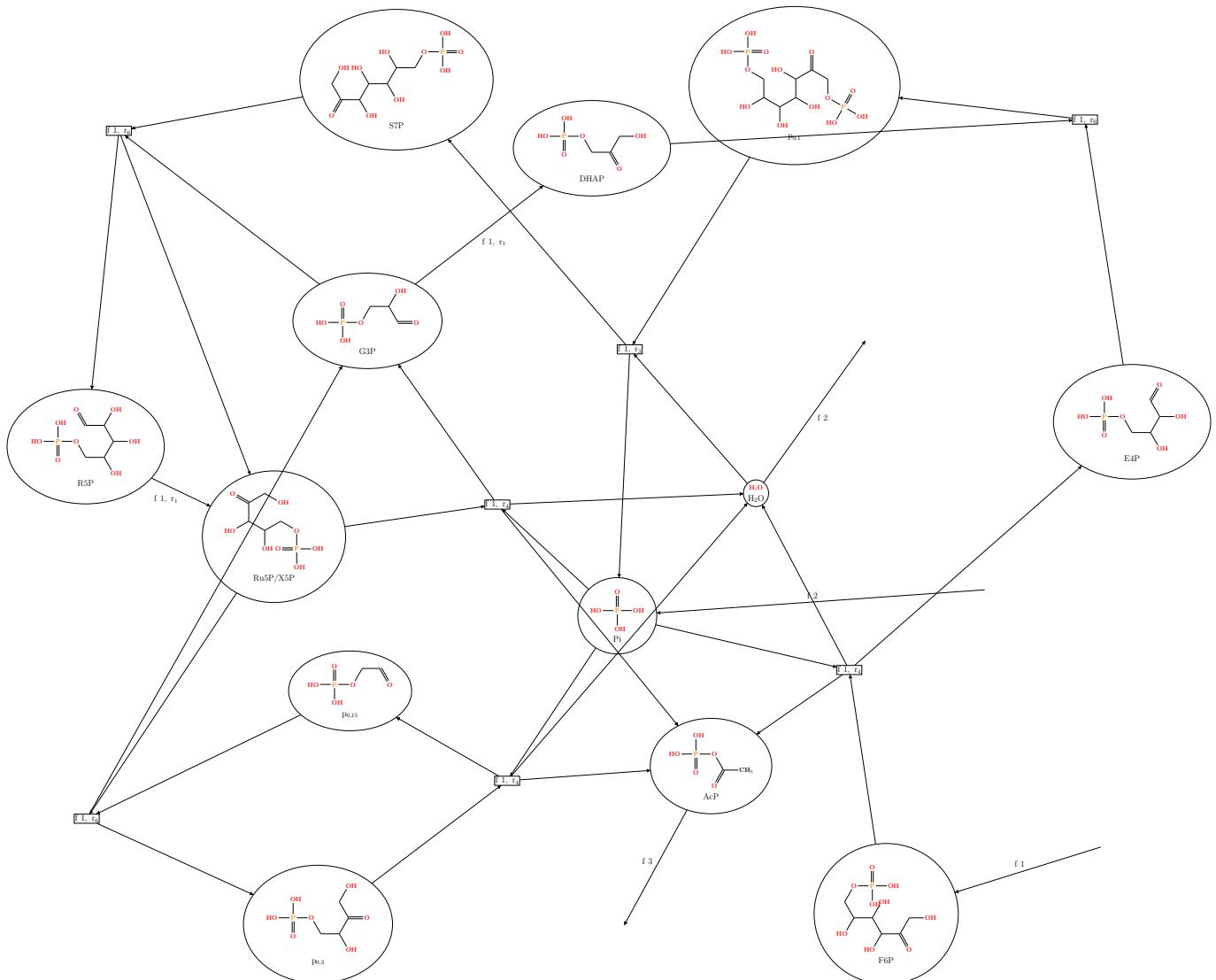
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/789_dg_0_11100_f_0_90_filt

$$|E| = 9 \quad |P| = 9$$

0.18.37 Solution 92

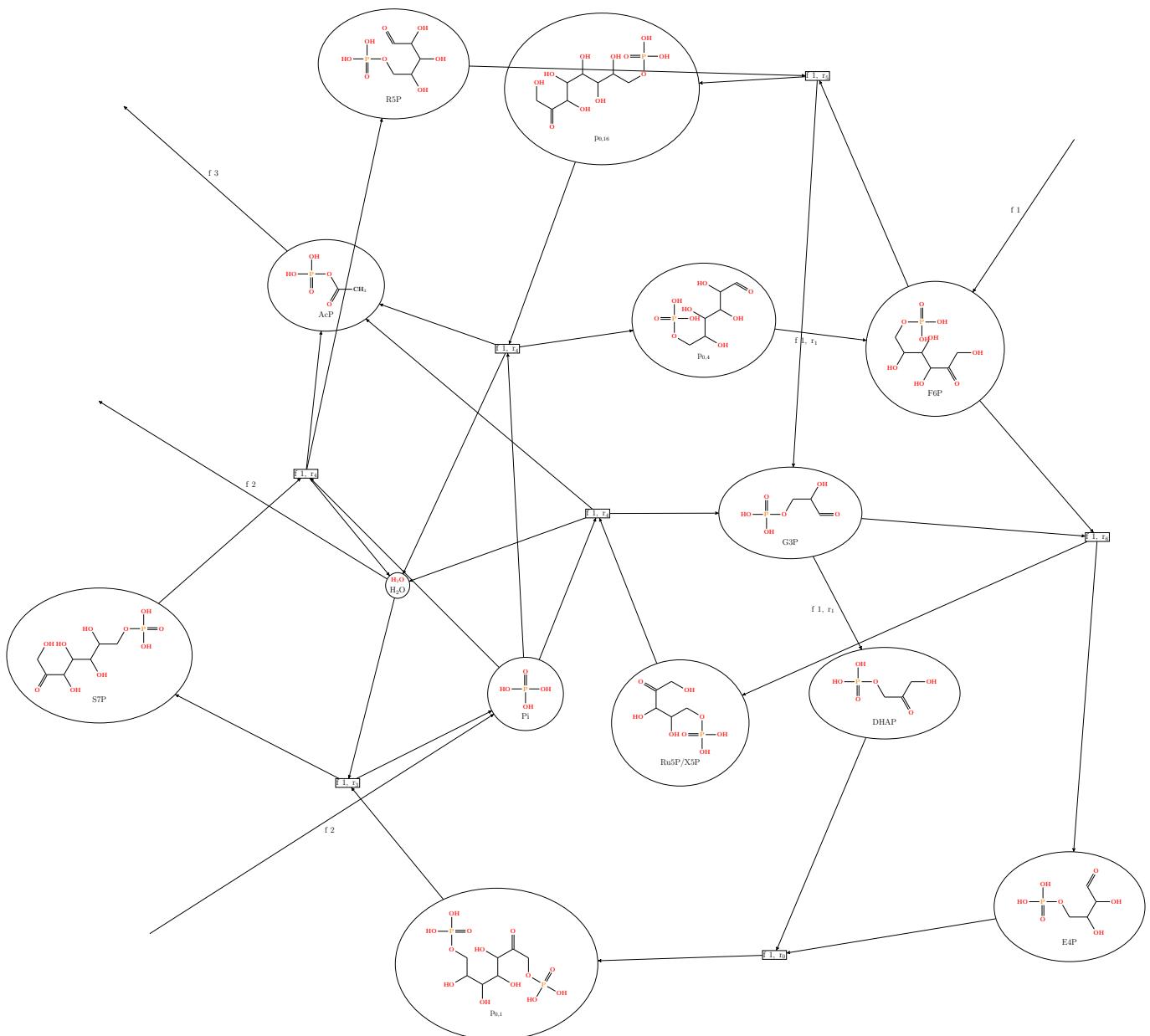
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/794_dg_0_11100_f_0_92_filt

$$|E| = 9 \quad |P| = 9$$

0.18.38 Solution 93

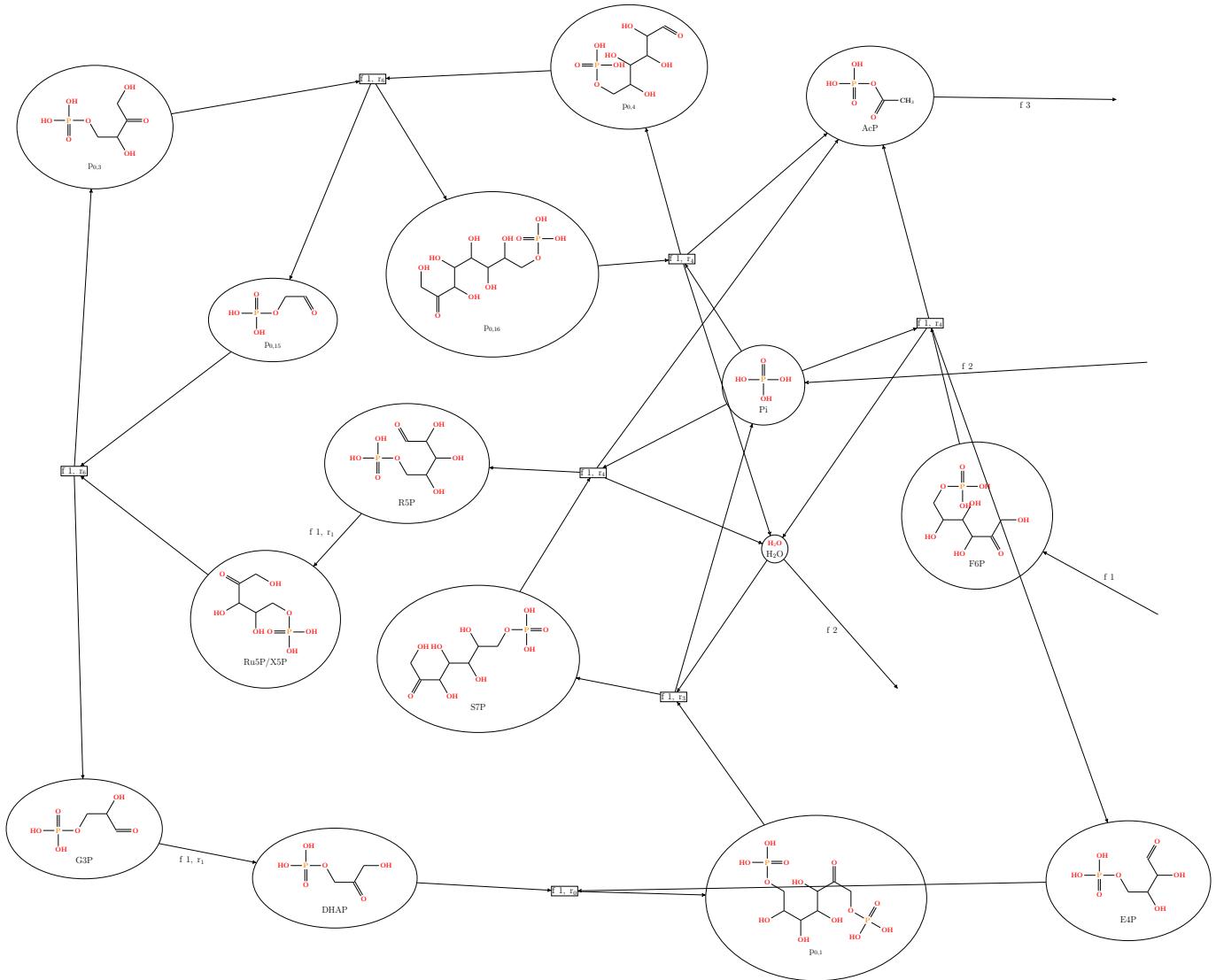
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



File: out/799_dg_0_11100_f_0_93_filt

$$|E| = 9 \quad |P| = 9$$

0.18.39 Solution 98

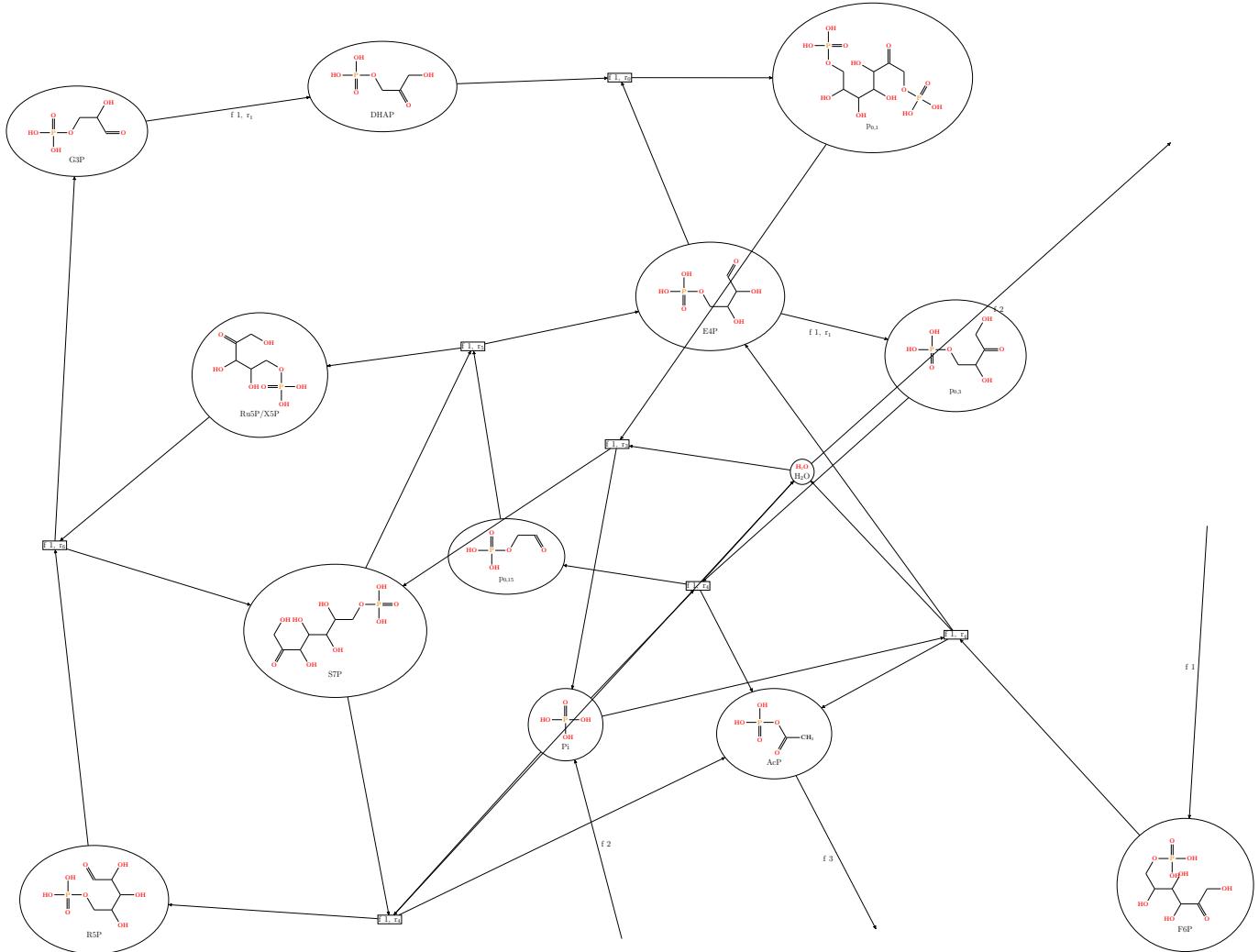
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/804_dg_0_11100_f_0_98_filt

$$|E| = 9 \quad |P| = 9$$

0.18.40 Solution 99

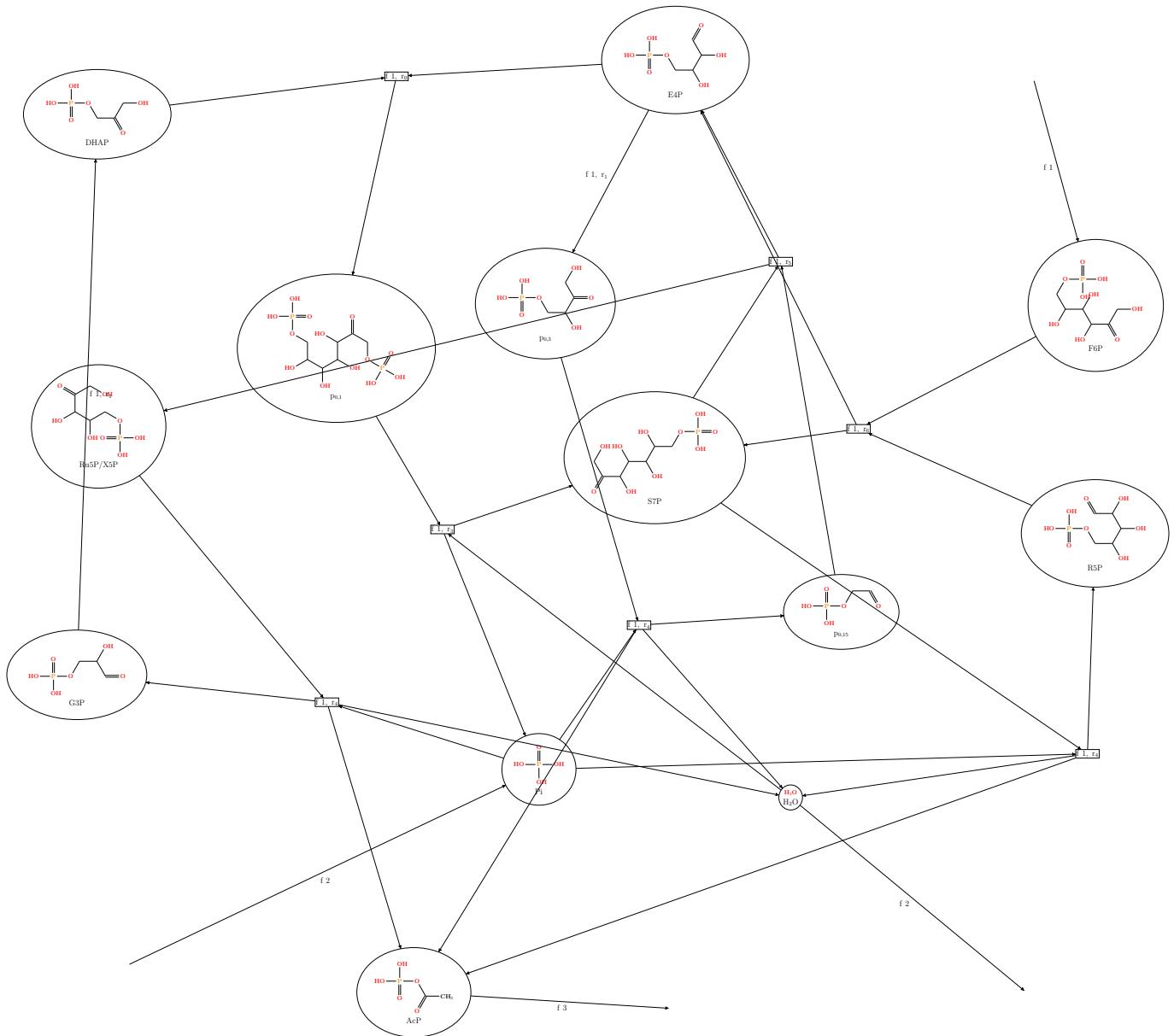
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



$$|\mathbf{E}| = 0, |\mathbf{D}| = 0$$

0.18.41 Solution 102

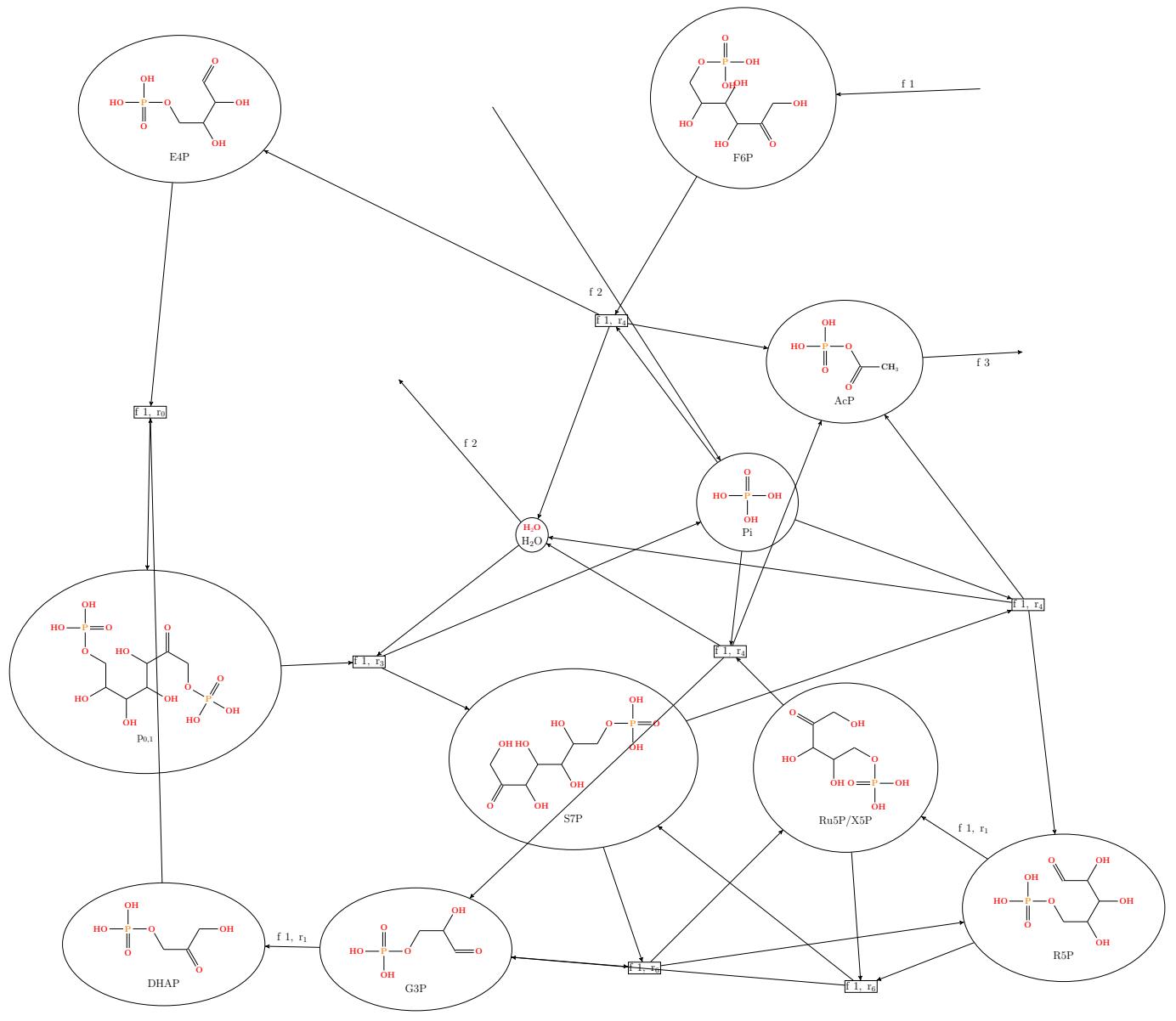
Overall Data

Objective value (integral): 9

objective value (In
Vertex/Graph In Out

Vertex/Graph	In	Out
AcP	0	3
F6P	1	0
H_2O	0	2
Pi	2	0

Filtered Graph



$$|E|=0, |D|=0$$

0.18.42 Sat 4:10

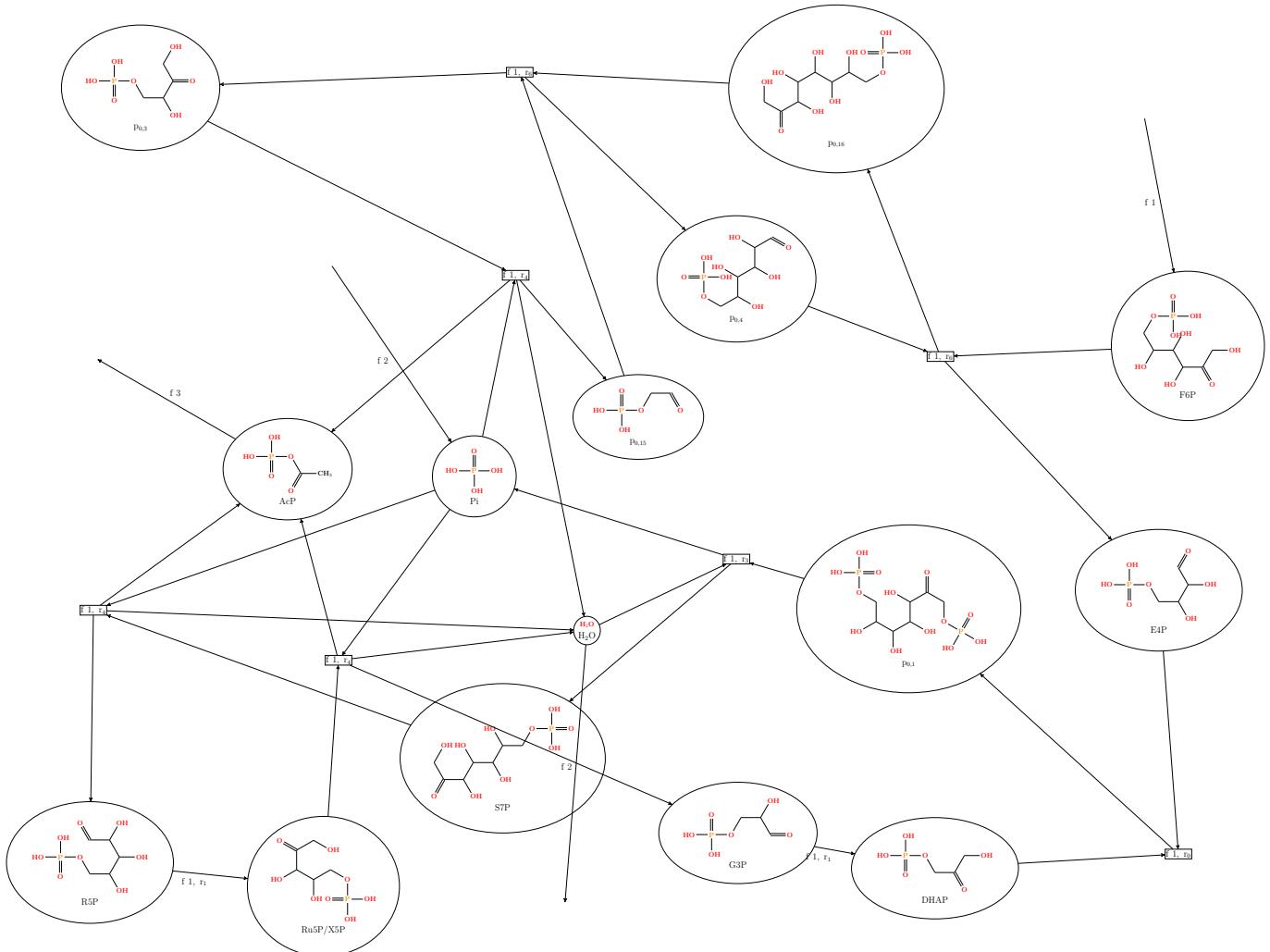
© 11 Dec

Objective value (integral): 0

Objective value (in
Vertices/Graph In Out

Vertex/Graph	In	Out
AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/819_dg_0_11100_f_0_104_filt

$$|E| = 9 \quad |P| = 9$$

0.18.43 Solution 107

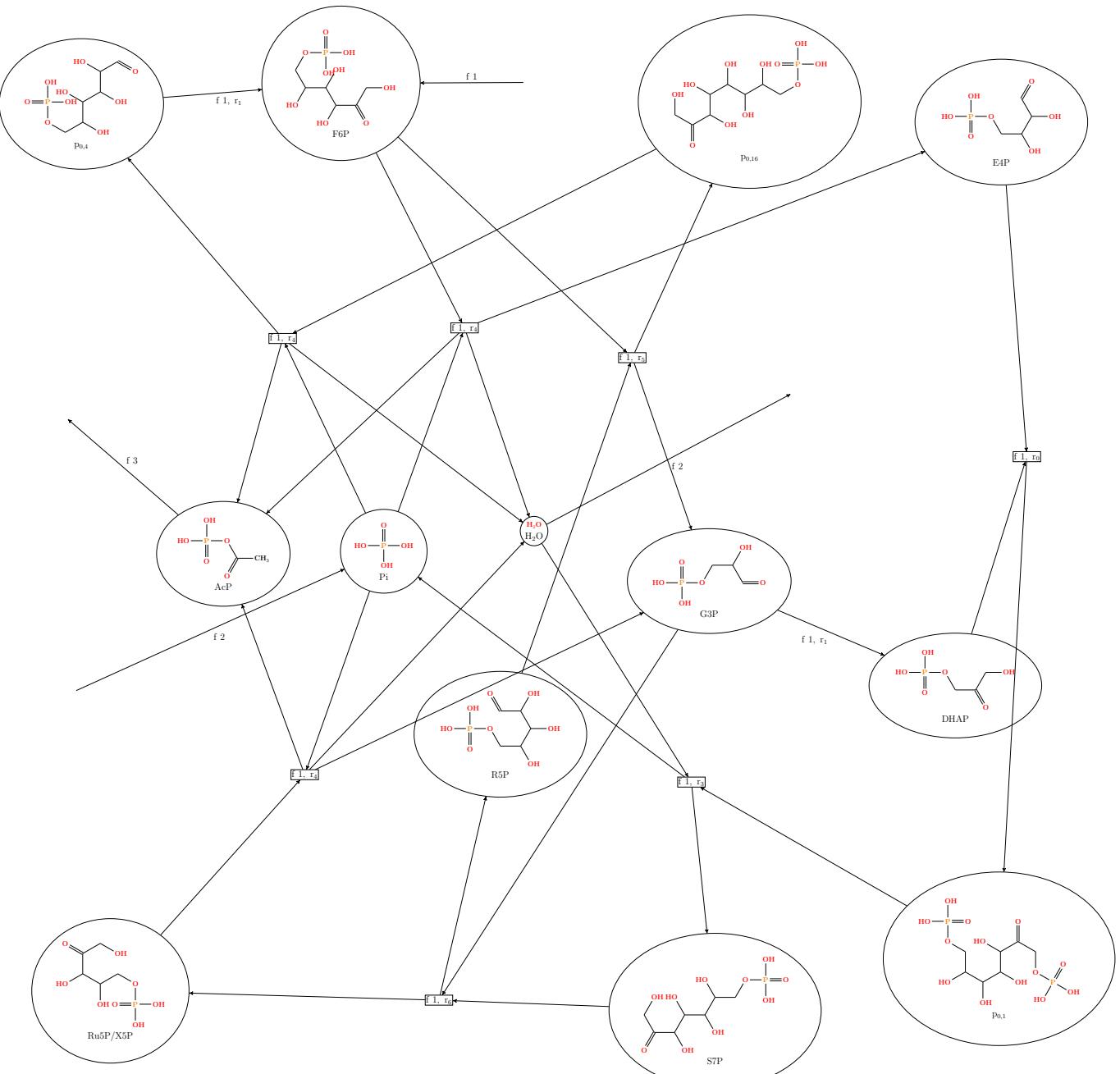
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H_20	0	2
Pi	2	0

Filtered Graph



File: out/824_dg_0_11100_f_0_107_filt

$$|E| = 9 \quad |P| = 9$$

0.18.44 Solution 109

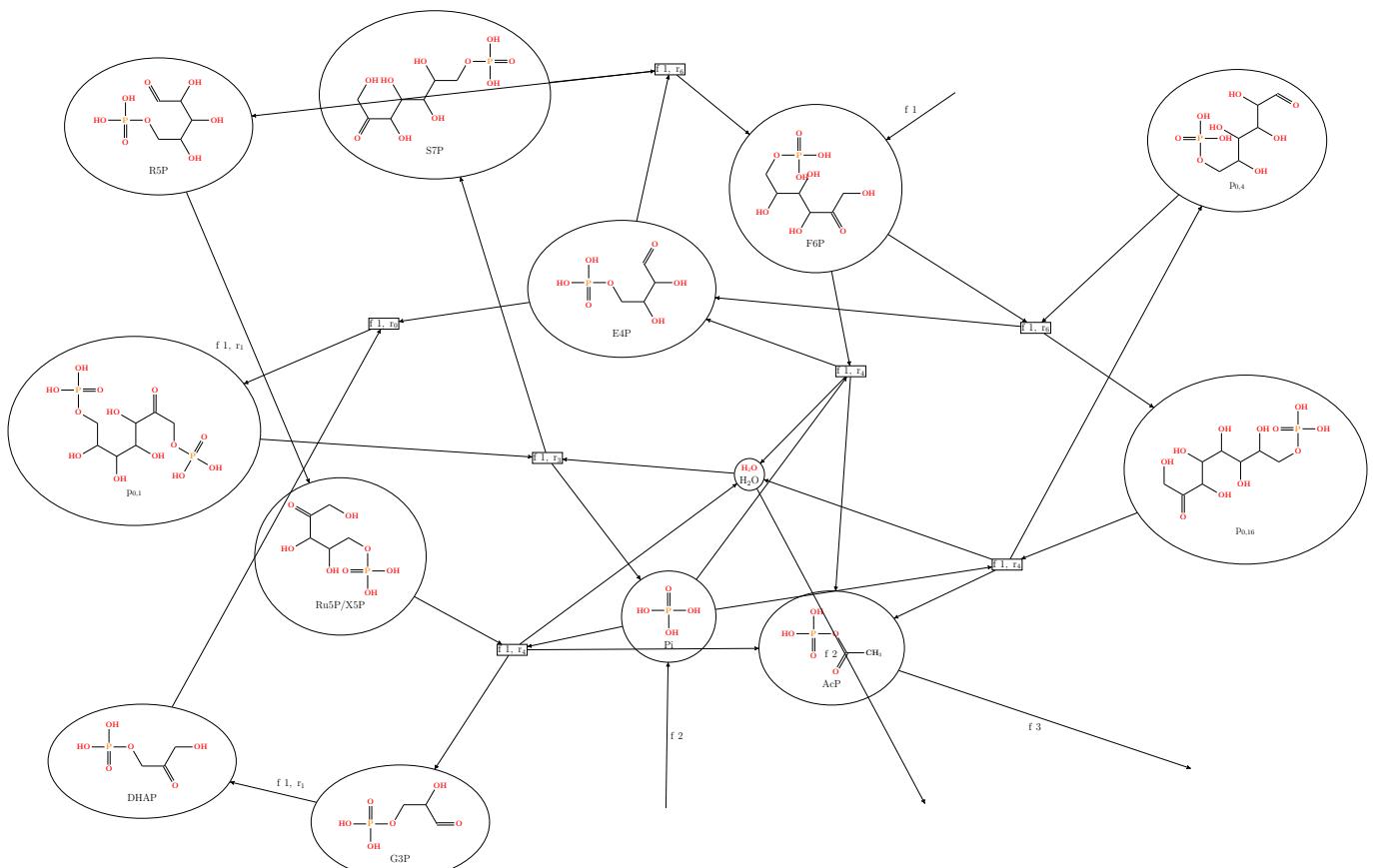
Overall Data

Objective value (integral): 9

Vertex/Graph In Out

AcP	0	3
F6P	1	0
H ₂ O	0	2
Pi	2	0

Filtered Graph



File: out/829_dg_0_11100_f_0_109_filt

$$|E| = 9 \quad |P| = 9$$

0.19 Enumerated Flows with 10 unique reactions

0.20 Enumerated Flows with 11 unique reactions