

Summary

December 6, 2024

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0.1 Loaded Graphs

0.1.1 g_{0}



File: out/001_g_0_10300000



File: out/003_g_0_11310100

0.1.2 g_{1}



File: out/005_g_1_10300000



File: out/007_g_1_11310100

0.1.3 g_{2}



File: out/009_g_2_10300000



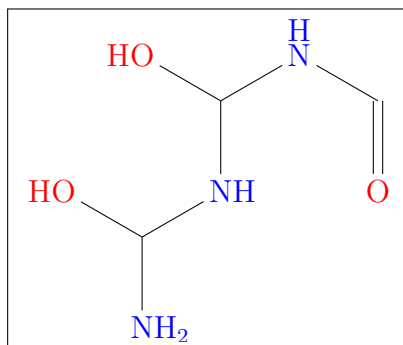
File: out/011_g_2_11310100

0.2 Product Graphs

0.2.1 p_{0,56}



File: out/013_g_1088_10300000



File: out/015_g_1088_11310100

0.3 Enumerated Flows

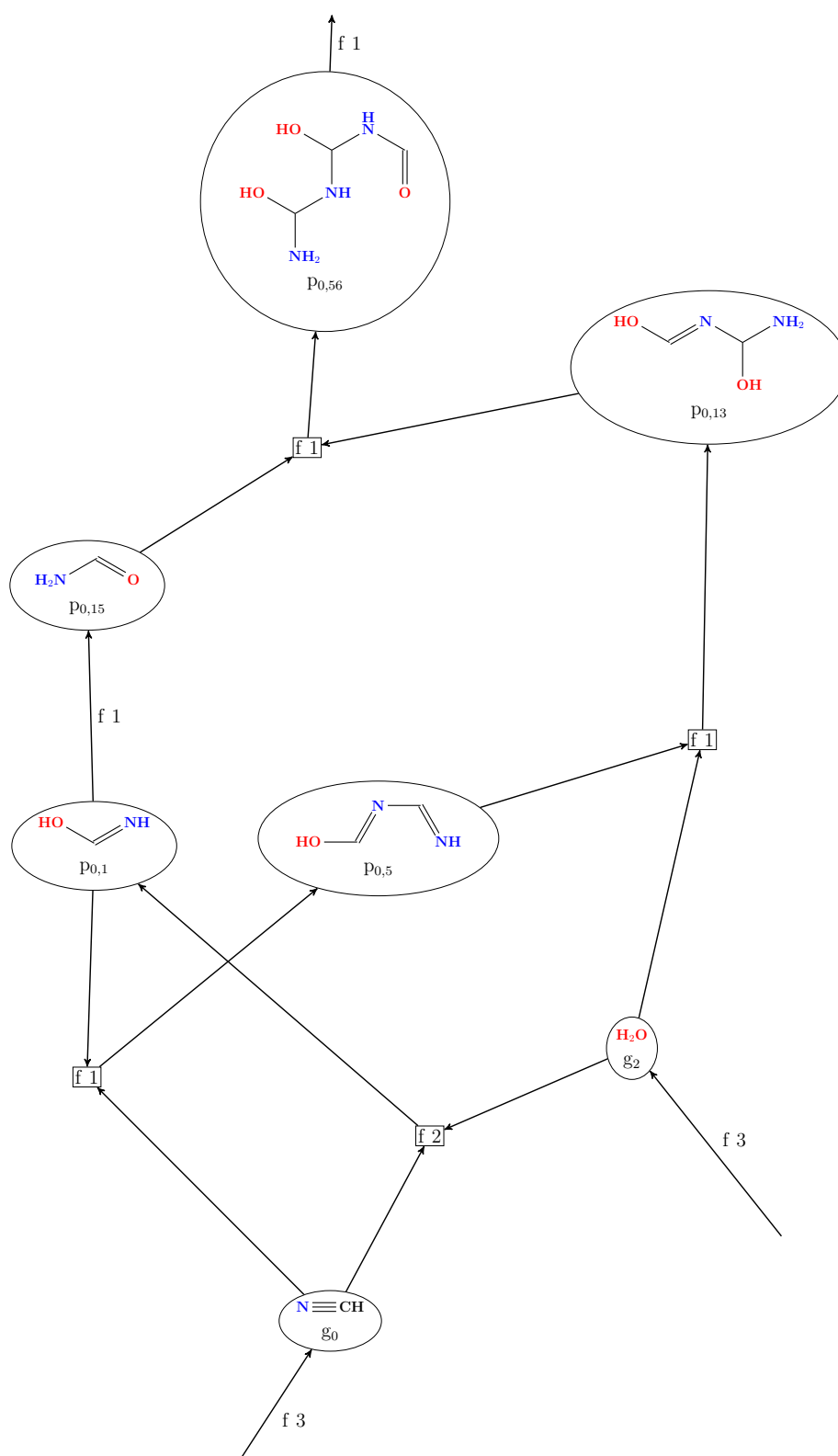
0.3.1 Solution 0

Overall Data

Objective value (non-integral): -0.0946457

| Vertex/Graph | In | Out | G | logK | t_order |
|--------------|----|-----|------------|-----------|---------|
| g_{0} | 3 | 0 | -5.507141 | -3.000000 | 0 |
| g_{2} | 3 | 0 | -5.068043 | -3.000000 | 0 |
| p_{0,13} | 0 | 0 | -21.240635 | -3.000000 | 64 |
| p_{0,15} | 0 | 0 | -10.625195 | -5.206623 | 2 |
| p_{0,1} | 0 | 0 | -10.610080 | -3.000000 | 1 |
| p_{0,56} | 0 | 1 | -31.869324 | -6.000000 | 67 |
| p_{0,5} | 0 | 0 | -16.158965 | -3.000000 | 63 |

Filtered Graph



File: out/029_dg_0_11100_f_0_0_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14458.99666 | -3.0 | -14468.974015 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -3.0 | -13316.122316 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 1 |
| $p_{0,5}$ | 0 | 0 | -42425.357769 | -3.0 | -42435.335125 | 63 |
| $p_{0,13}$ | 0 | 0 | -55767.279594 | -3.0 | -55777.256949 | 64 |
| $p_{0,15}$ | 0 | 0 | -27896.445756 | -5.206623 | -27913.761864 | 2 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|-----------------------|-------------|------|---------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 2 | -79.148026 | -79.148026 |
| 14 | $g_0, p_{0,1},$ | $p_{0,5},$ | 1 | -97.128075 | -97.128075 |
| 36 | $p_{0,1},$ | $p_{0,15},$ | 1 | -48.857857 | -48.857857 |
| 123 | $g_2, p_{0,5},$ | $p_{0,13},$ | 1 | -23.30517 | -23.30517 |
| 169 | $p_{0,13}, p_{0,15},$ | $p_{0,56},$ | 1 | 0.0 | 0.0 |
| Sum | | | | -248.49235223927863 | |

$$\Delta G = -32.758715019543075$$

$$\Delta E = -0.09464573847303762$$

$$|E| = 6$$

$$|U| = 5$$

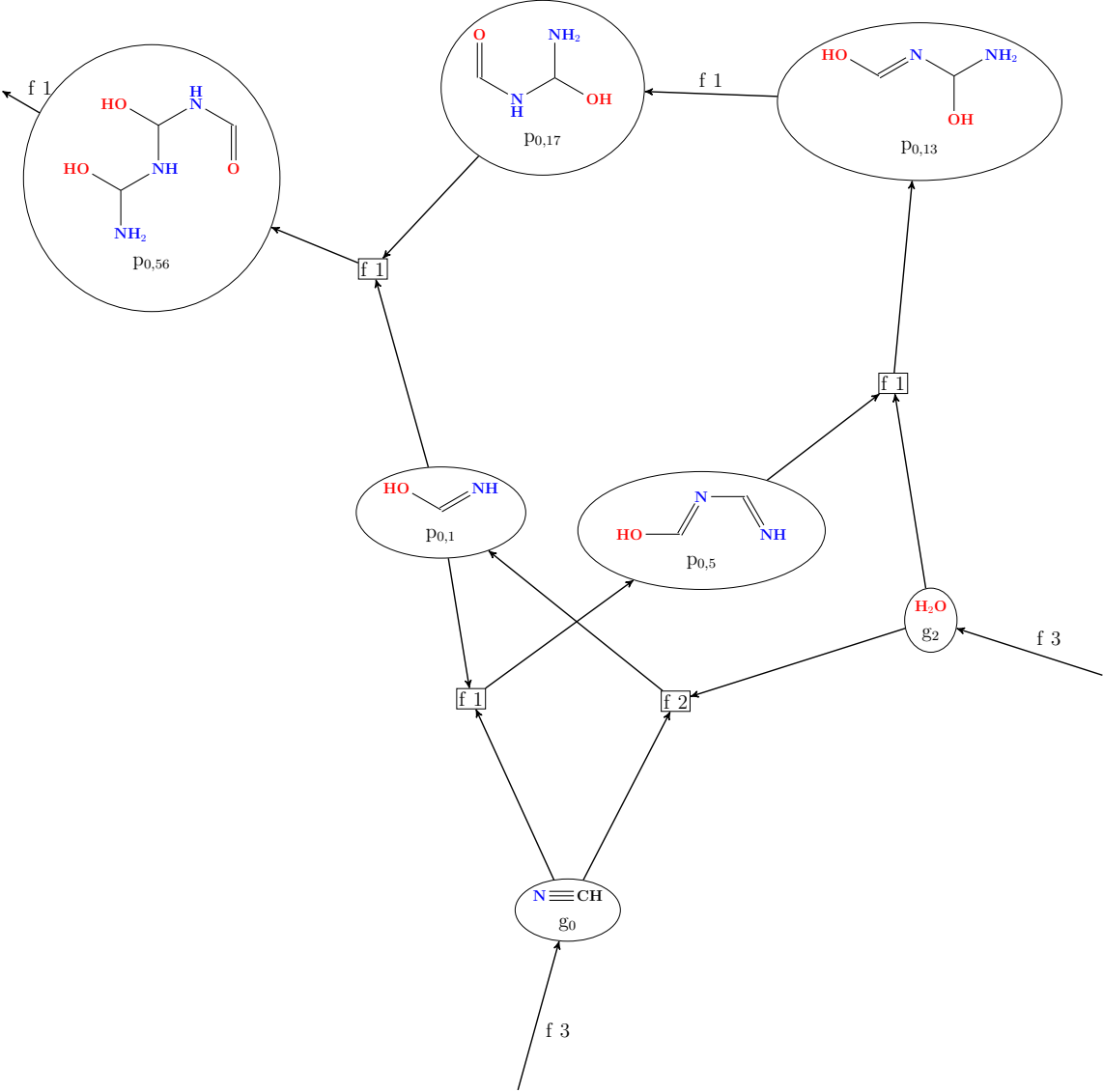
0.3.2 Solution 1

Overall Data

Objective value (non-integral): -0.0946457

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507141 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -6.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240678 | -3.386176 | 33 |
| $p_{\{0,17\}}$ | 0 | 0 | -21.248887 | -3.000000 | 35 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 31 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |
| $p_{\{0,5\}}$ | 0 | 0 | -16.158998 | -6.000000 | 32 |

Filtered Graph



File: out/040_dg_0_11100_f_0_1_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14458.99666 | -3.0 | -14468.974015 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -6.0 | -13326.099672 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 31 |
| $p_{0,5}$ | 0 | 0 | -42425.44262 | -6.0 | -42445.397331 | 32 |
| $p_{0,13}$ | 0 | 0 | -55767.391129 | -3.386176 | -55778.652821 | 33 |
| $p_{0,17}$ | 0 | 0 | -55788.944315 | -3.0 | -55798.92167 | 35 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 2 | -66.676332 | -66.676332 |
| 14 | $g_0, p_{0,1},$ | $p_{0,5},$ | 1 | -109.68462 | -109.68462 |
| 123 | $g_2, p_{0,5},$ | $p_{0,13},$ | 1 | 0.006113 | 0.006113 |
| 196 | $p_{0,1}, p_{0,17},$ | $p_{0,56},$ | 1 | -27.193136 | -27.193136 |
| 250 | $p_{0,13},$ | $p_{0,17},$ | 1 | -19.947765 | -19.947765 |
| Sum | | | | | -248.49235223927863 |

$$\Delta G = -29.017206588157613$$

$$\Delta E = -0.09464573847303762$$

$$|E| = 6$$

$$|U| = 5$$

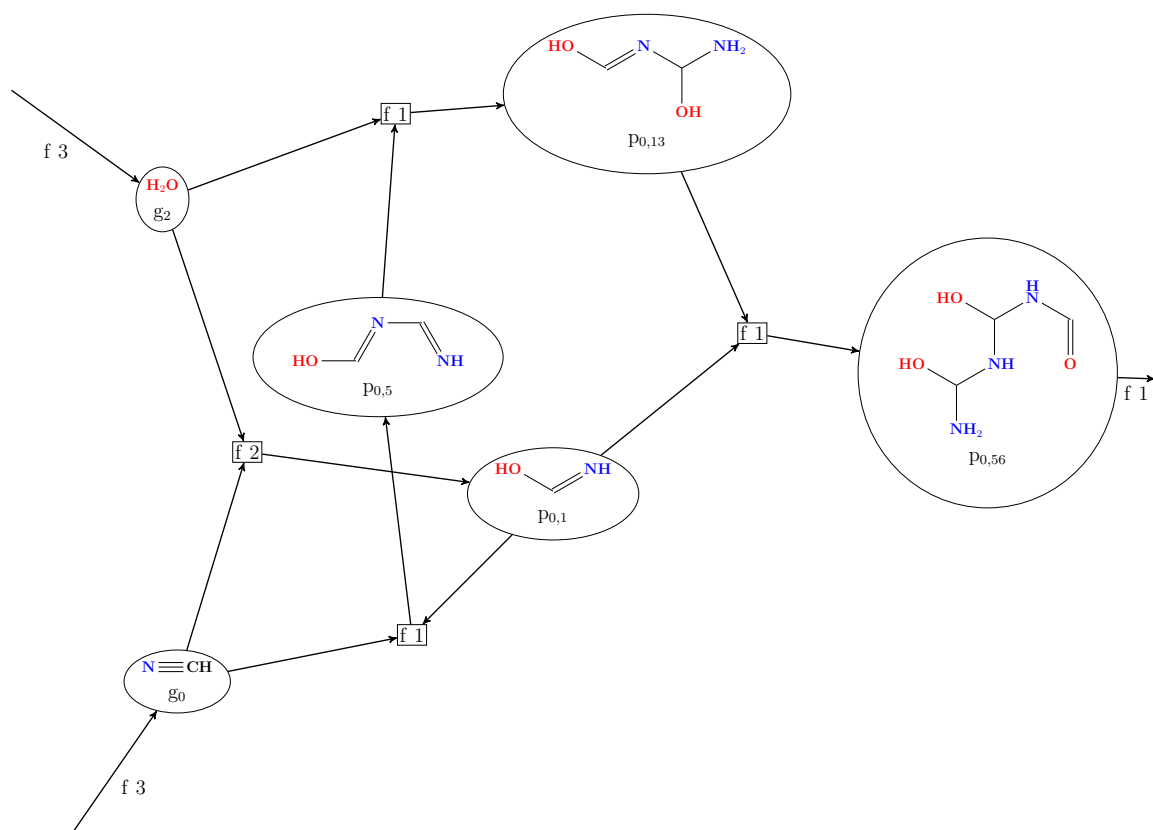
0.3.3 Solution 2

Overall Data

Objective value (non-integral): -0.0946457

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -6.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240678 | -3.386176 | 3 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610101 | -3.000000 | 1 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |
| $p_{\{0,5\}}$ | 0 | 0 | -16.158998 | -6.000000 | 2 |

Filtered Graph



File: out/049_dg_0_11100_f_0_2_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -6.0 | -13326.099672 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.817054 | -3.0 | -27866.79441 | 1 |
| $p_{0,5}$ | 0 | 0 | -42425.44262 | -6.0 | -42445.397331 | 2 |
| $p_{0,13}$ | 0 | 0 | -55767.391129 | -3.386176 | -55778.652821 | 3 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|--------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 2 | -66.703128 | -66.703128 |
| 14 | $g_0, p_{0,1},$ | $p_{0,5},$ | 1 | -109.599988 | -109.599988 |
| 123 | $g_2, p_{0,5},$ | $p_{0,13},$ | 1 | 0.006113 | 0.006113 |
| 263 | $p_{0,1}, p_{0,13},$ | $p_{0,56},$ | 1 | -47.085187 | -47.085187 |
| Sum | | | | -248.4923522392785 | |

$$\Delta G = -29.008531149698882$$

$$\Delta E = -0.09464573847303756$$

$$|E| = 5$$

$$|U| = 4$$

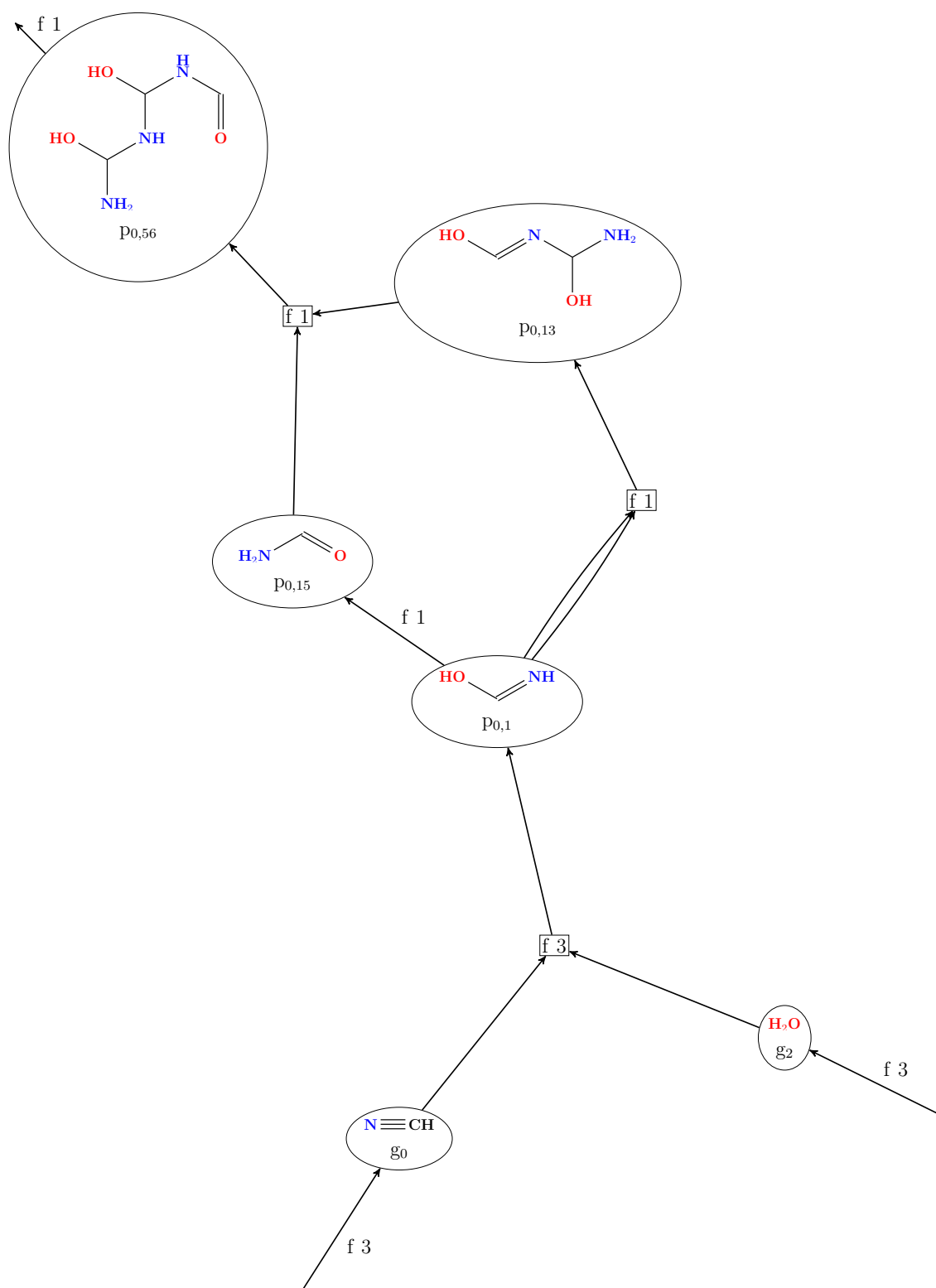
0.3.4 Solution 3

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068033 | -6.000000 | 20 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240678 | -3.000000 | 43 |
| $p_{\{0,15\}}$ | 0 | 0 | -10.625174 | -5.194685 | 23 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610101 | -6.000000 | 21 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/058_dg_0_11100_f_0_3_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.118349 | -6.0 | -13326.073059 | 20 |
| $p_{0,1}$ | 0 | 0 | -27856.817054 | -6.0 | -27876.771765 | 21 |
| $p_{0,13}$ | 0 | 0 | -55767.391129 | -3.0 | -55777.368484 | 43 |
| $p_{0,15}$ | 0 | 0 | -27896.389963 | -5.194685 | -27913.666369 | 23 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|-----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -79.201434 | -79.201434 |
| 30 | $p_{0,1}, p_{0,1},$ | $p_{0,13},$ | 1 | -16.341938 | -16.341938 |
| 36 | $p_{0,1},$ | $p_{0,15},$ | 1 | -36.225028 | -36.225028 |
| 169 | $p_{0,13}, p_{0,15},$ | $p_{0,56},$ | 1 | 0.006113 | 0.006113 |
| Sum | | | | | -169.3177139192934 |

$$\Delta G = -29.016515294102543$$

$$\Delta E = -0.064489711357503$$

$$|E| = 6$$

$$|U| = 4$$

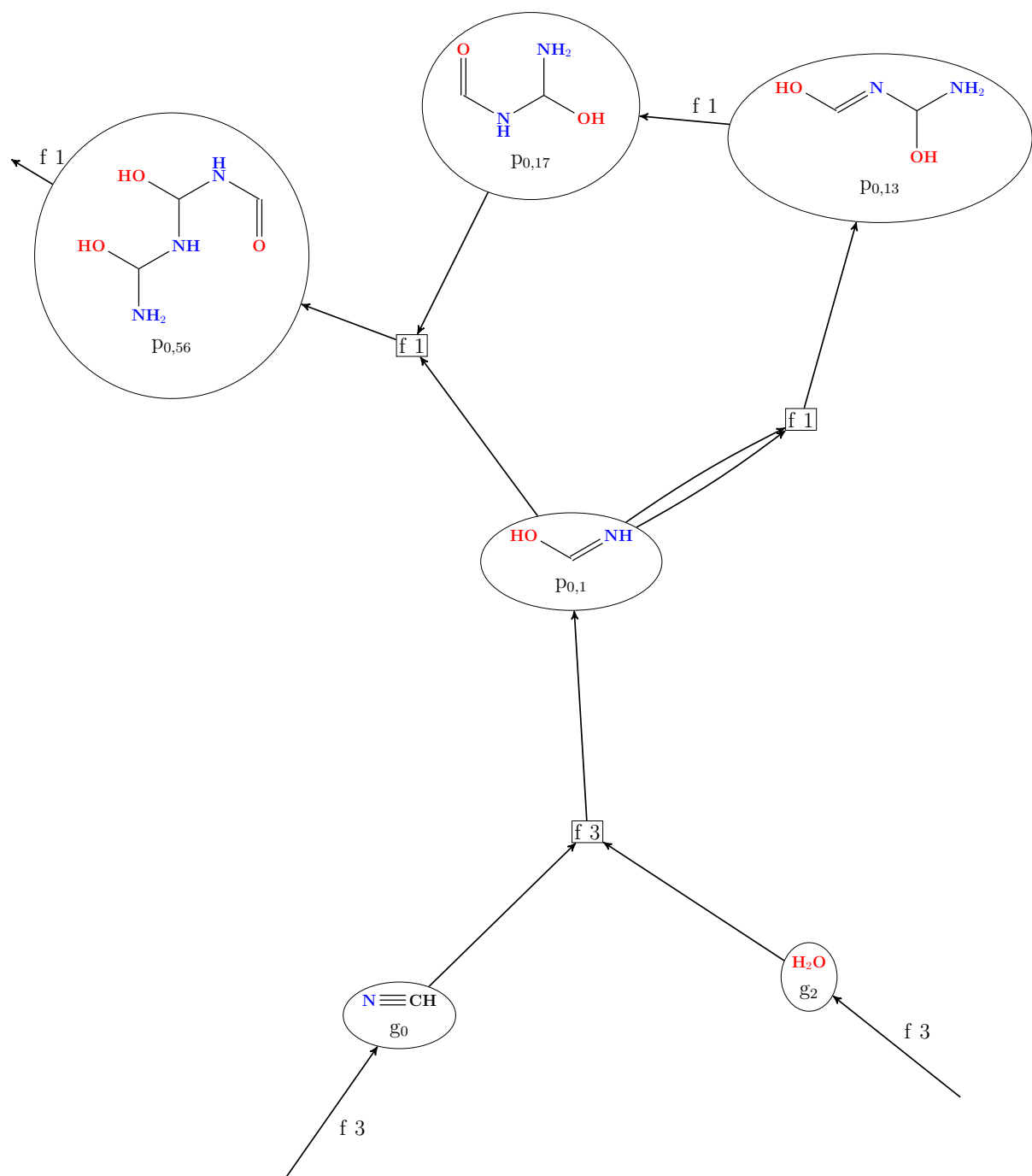
0.3.5 Solution 4

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -6.000000 | 20 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240635 | -3.000000 | 44 |
| $p_{\{0,17\}}$ | 0 | 0 | -21.248844 | -3.000000 | 45 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 21 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/067_dg_0_11100_f_0_4_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|---------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -6.0 | -13326.099672 | 20 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 21 |
| $p_{0,13}$ | 0 | 0 | -55767.279594 | -3.0 | -55777.256949 | 44 |
| $p_{0,17}$ | 0 | 0 | -55788.832737 | -3.0 | -55798.810092 | 45 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -66.647414 | -66.647414 |
| 30 | $p_{0,1}, p_{0,1},$ | $p_{0,13},$ | 1 | -41.285219 | -41.285219 |
| 196 | $p_{0,1}, p_{0,17},$ | $p_{0,56},$ | 1 | -27.304714 | -27.304714 |
| 250 | $p_{0,13},$ | $p_{0,17},$ | 1 | -21.553143 | -21.553143 |
| Sum | | | | | -169.3177139192934 |

$$\Delta G = -29.008531149698882$$

$$\Delta E = -0.064489711357503$$

$$|E| = 6$$

$$|U| = 4$$

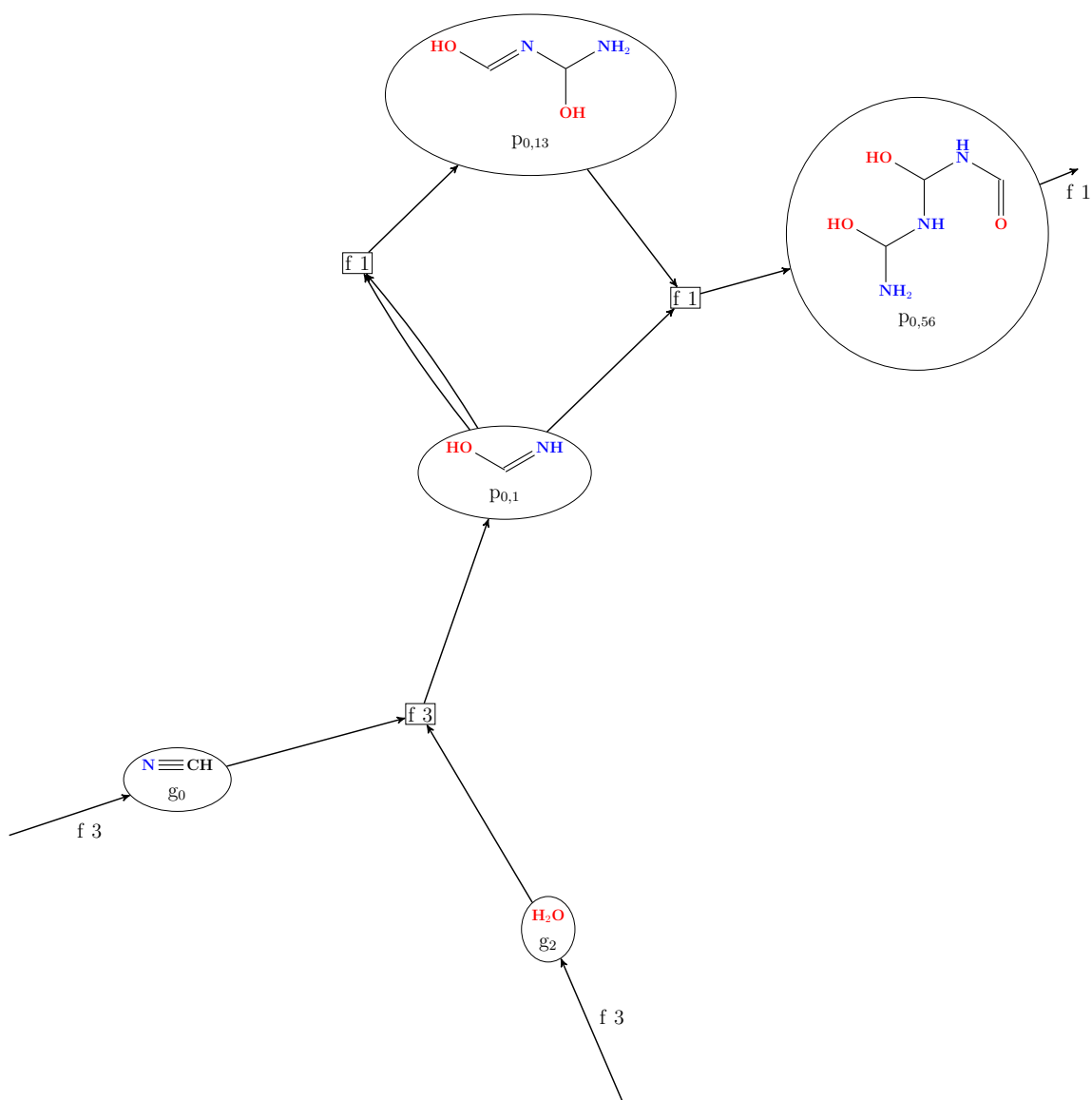
0.3.6 Solution 5

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -3.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240635 | -3.000000 | 65 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 1 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/076_dg_0_11100_f_0_5_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|---------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -3.0 | -13316.122316 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 1 |
| $p_{0,13}$ | 0 | 0 | -55767.279594 | -3.0 | -55777.256949 | 65 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -79.119108 | -79.119108 |
| 30 | $p_{0,1}, p_{0,1},$ | $p_{0,13},$ | 1 | -41.285219 | -41.285219 |
| 263 | $p_{0,1}, p_{0,13},$ | $p_{0,56},$ | 1 | -48.857857 | -48.857857 |
| Sum | | | | | -169.31771391929325 |

$$\Delta G = -32.750039055984416$$

$$\Delta E = -0.06448971135750295$$

$$|E| = 5$$

$$|U| = 3$$

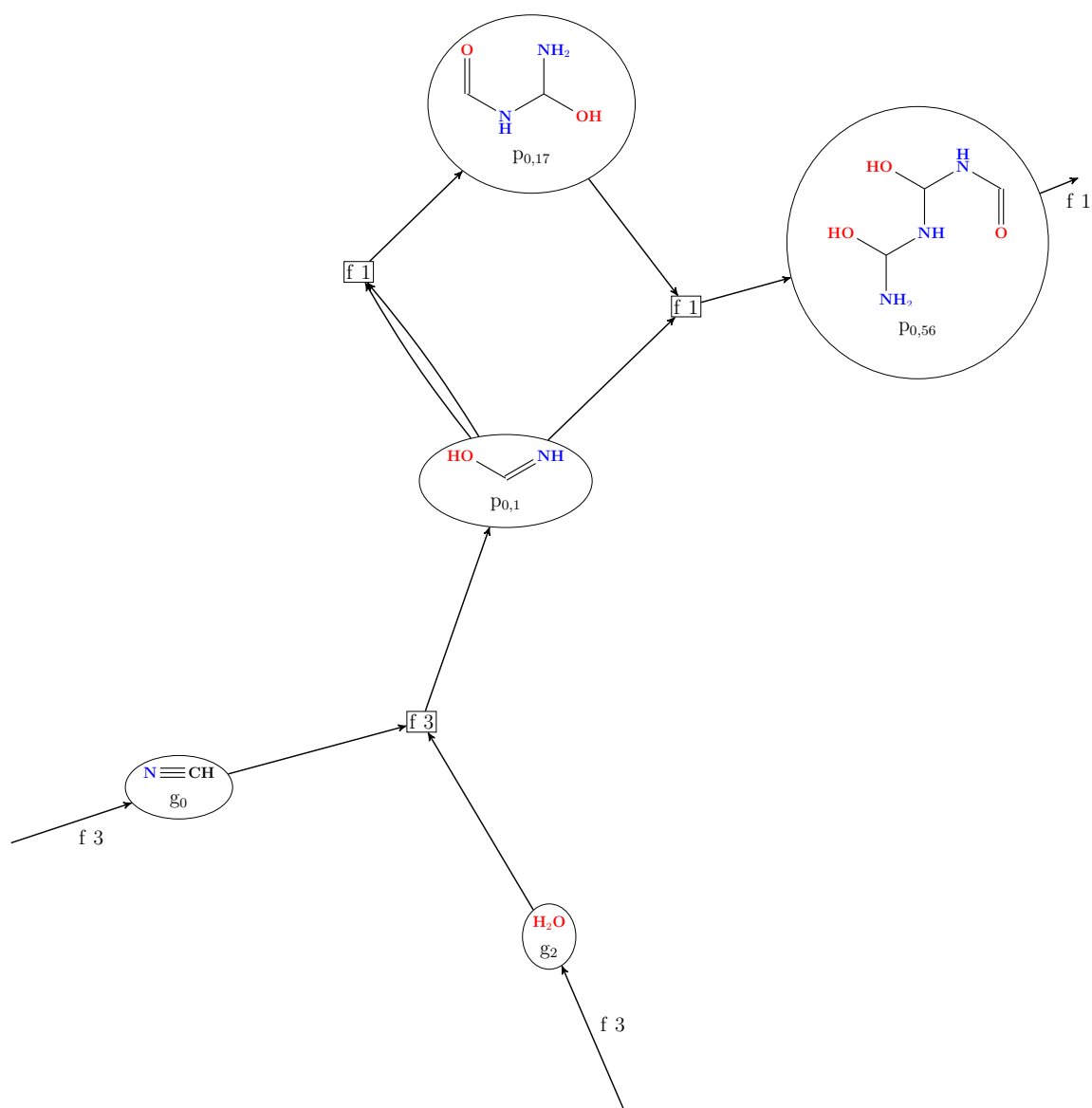
0.3.7 Solution 6

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -3.000000 | 0 |
| $p_{\{0,17\}}$ | 0 | 0 | -21.248844 | -3.000000 | 35 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 1 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/085_dg_0_11100_f_0_6_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|---------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -3.0 | -13316.122316 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 1 |
| $p_{0,17}$ | 0 | 0 | -55788.832737 | -3.0 | -55798.810092 | 35 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -79.119108 | -79.119108 |
| 40 | $p_{0,1}, p_{0,1},$ | $p_{0,17},$ | 1 | -62.838362 | -62.838362 |
| 196 | $p_{0,1}, p_{0,17},$ | $p_{0,56},$ | 1 | -27.304714 | -27.304714 |
| Sum | | | | | -169.31771391929325 |

$$\Delta G = -32.750039055984416$$

$$\Delta E = -0.06448971135750295$$

$$|E| = 5$$

$$|U| = 3$$

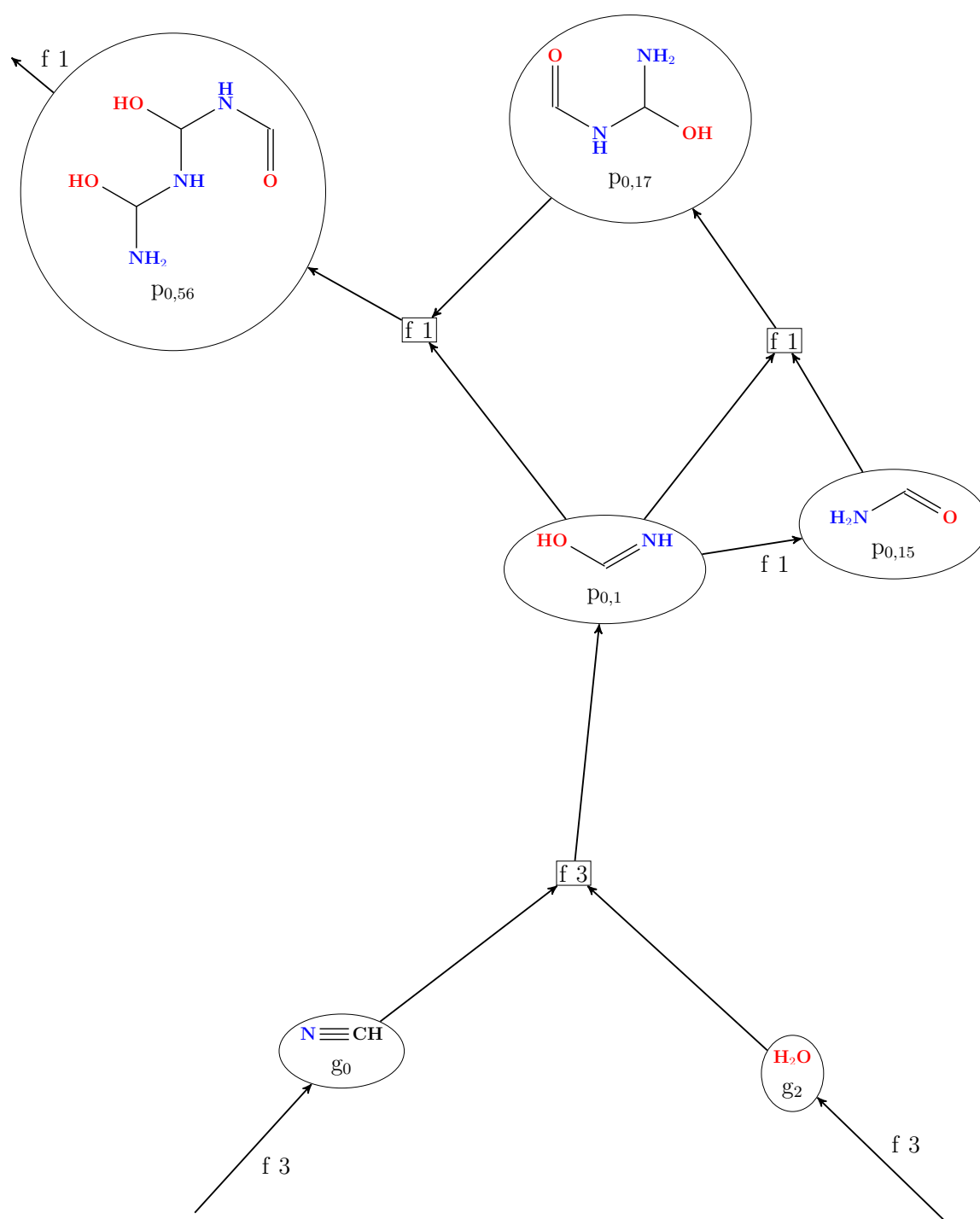
0.3.8 Solution 7

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -6.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -6.000000 | 15 |
| $p_{\{0,15\}}$ | 0 | 0 | -10.625195 | -3.000000 | 33 |
| $p_{\{0,17\}}$ | 0 | 0 | -21.248844 | -3.000000 | 50 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 16 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/094_dg_0_11100_f_0_7_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|---------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -6.0 | -14478.980288 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -6.0 | -13326.099672 | 15 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 16 |
| $p_{0,15}$ | 0 | 0 | -27896.445756 | -3.0 | -27906.423111 | 33 |
| $p_{0,17}$ | 0 | 0 | -55788.832737 | -3.0 | -55798.810092 | 50 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -54.17572 | -54.17572 |
| 36 | $p_{0,1},$ | $p_{0,15},$ | 1 | -39.684415 | -39.684415 |
| 183 | $p_{0,1}, p_{0,15},$ | $p_{0,17},$ | 1 | -23.153947 | -23.153947 |
| 196 | $p_{0,1}, p_{0,17},$ | $p_{0,56},$ | 1 | -27.304714 | -27.304714 |
| Sum | | | | | -169.3177139192934 |

$$\Delta G = -25.26702324341335$$

$$\Delta E = -0.064489711357503$$

$$|E| = 6$$

$$|U| = 4$$

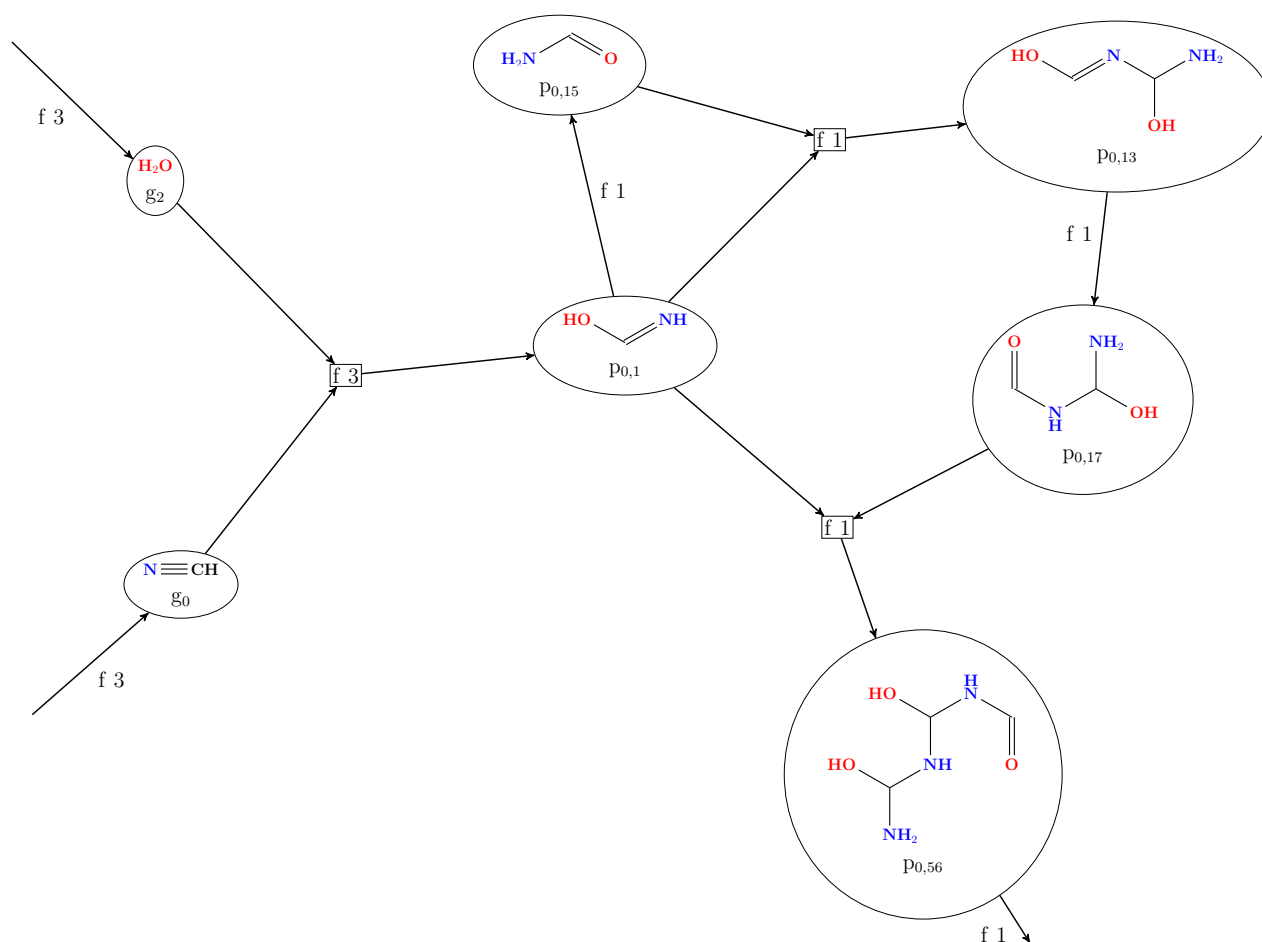
0.3.9 Solution 8

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -6.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -6.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240635 | -3.000000 | 4 |
| $p_{\{0,15\}}$ | 0 | 0 | -10.625195 | -3.386535 | 2 |
| $p_{\{0,17\}}$ | 0 | 0 | -21.248844 | -3.000000 | 65 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 1 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/103_dg_0_11100_f_0_8_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -6.0 | -14478.980288 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -6.0 | -13326.099672 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 1 |
| $p_{0,13}$ | 0 | 0 | -55767.279594 | -3.0 | -55777.256949 | 4 |
| $p_{0,15}$ | 0 | 0 | -27896.445756 | -3.386535 | -27907.708644 | 2 |
| $p_{0,17}$ | 0 | 0 | -55788.832737 | -3.0 | -55798.810092 | 65 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|---------------------|------------|------|---------------------|------------------------|
| 6 | g_0, g_2 | $p_{0,1}$ | 3 | -54.17572 | -54.17572 |
| 36 | $p_{0,1}$ | $p_{0,15}$ | 1 | -41.291332 | -41.291332 |
| 192 | $p_{0,1}, p_{0,15}$ | $p_{0,13}$ | 1 | 0.006113 | 0.006113 |
| 196 | $p_{0,1}, p_{0,17}$ | $p_{0,56}$ | 1 | -27.304714 | -27.304714 |
| 250 | $p_{0,13}$ | $p_{0,17}$ | 1 | -21.553143 | -21.553143 |
| Sum | | | | -169.31771391929323 | |

$$\Delta G = -25.26702324341335$$

$$\Delta E = -0.06448971135750294$$

$$|E| = 7$$

$$|U| = 5$$

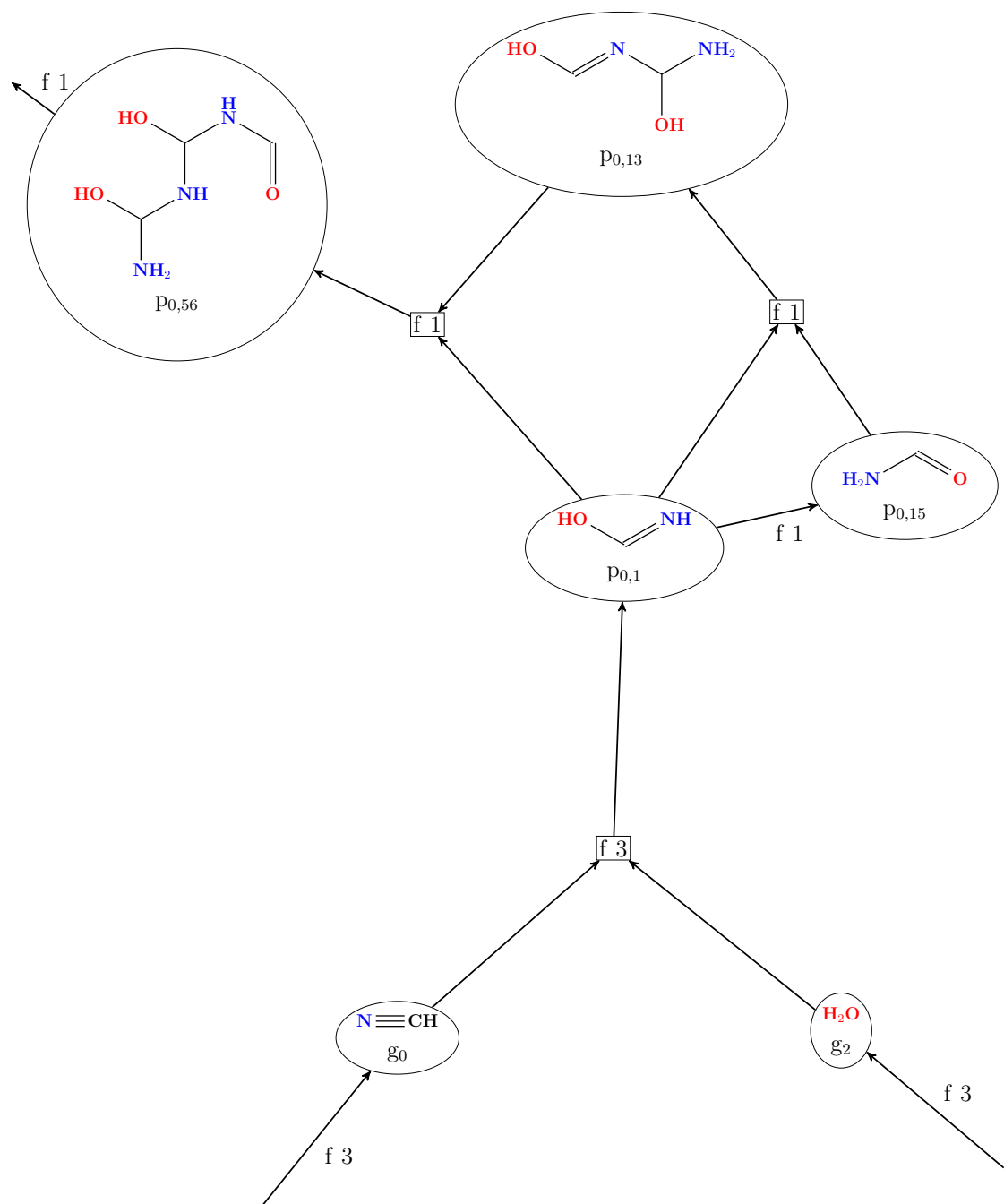
0.3.10 Solution 9

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -3.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240678 | -5.586617 | 44 |
| $p_{\{0,15\}}$ | 0 | 0 | -10.625174 | -3.000000 | 22 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610101 | -6.000000 | 21 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869260 | -3.000000 | 67 |

Filtered Graph



File: out/112_dg_0_11100_f_0_9_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -3.0 | -13316.122316 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.817054 | -6.0 | -27876.771765 | 21 |
| $p_{0,13}$ | 0 | 0 | -55767.391129 | -5.586617 | -55785.971015 | 44 |
| $p_{0,15}$ | 0 | 0 | -27896.389963 | -3.0 | -27906.367318 | 22 |
| $p_{0,56}$ | 0 | 1 | -83672.731446 | -3.0 | -83682.708802 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|----------------------|-------------|------|---------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -91.646516 | -91.646516 |
| 36 | $p_{0,1},$ | $p_{0,15},$ | 1 | -27.101215 | -27.101215 |
| 192 | $p_{0,1}, p_{0,15},$ | $p_{0,13},$ | 1 | 0.006113 | 0.006113 |
| 263 | $p_{0,1}, p_{0,13},$ | $p_{0,56},$ | 1 | -12.826712 | -12.826712 |
| Sum | | | | -169.31771391929308 | |

$$\Delta G = -31.48613560683708$$

$$\Delta E = -0.06448971135750288$$

$$|E| = 6$$

$$|U| = 4$$

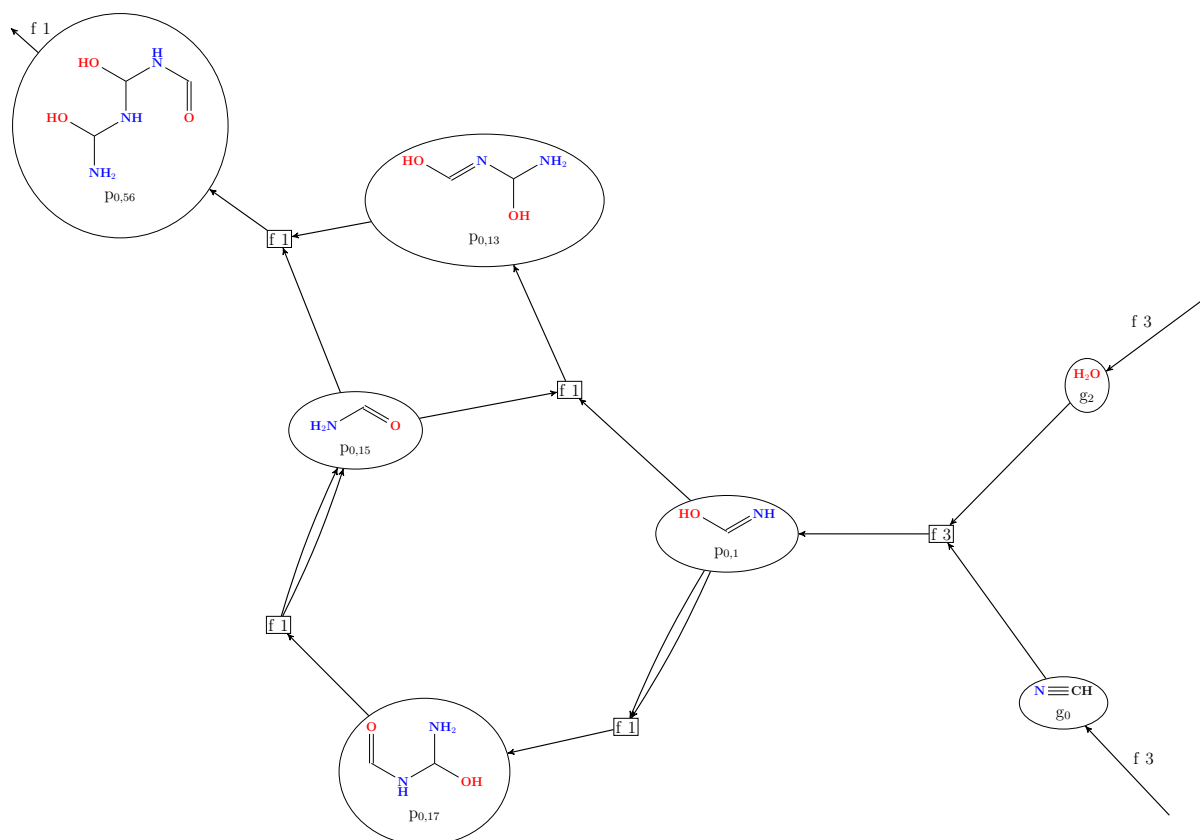
0.3.11 Solution 10

Overall Data

Objective value (non-integral): -0.0644897

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -3.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -3.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240678 | -3.000000 | 62 |
| $p_{\{0,15\}}$ | 0 | 0 | -10.625174 | -3.000000 | 4 |
| $p_{\{0,17\}}$ | 0 | 0 | -21.248887 | -6.000000 | 3 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610101 | -3.413383 | 1 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -3.0 | -14469.002933 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -3.0 | -13316.122316 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.817054 | -3.413383 | -27868.169234 | 1 |
| $p_{0,13}$ | 0 | 0 | -55767.391129 | -3.0 | -55777.368484 | 62 |
| $p_{0,15}$ | 0 | 0 | -27896.389963 | -3.0 | -27906.367318 | 4 |
| $p_{0,17}$ | 0 | 0 | -55788.944315 | -6.0 | -55808.899025 | 3 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|-----------------------|-----------------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -80.893352 | -80.893352 |
| 40 | $p_{0,1}, p_{0,1},$ | $p_{0,17},$ | 1 | -71.873145 | -71.873145 |
| 169 | $p_{0,13}, p_{0,15},$ | $p_{0,56},$ | 1 | -9.1177 | -9.1177 |
| 192 | $p_{0,1}, p_{0,15},$ | $p_{0,13},$ | 1 | 0.006113 | 0.006113 |
| 237 | $p_{0,17},$ | $p_{0,15}, p_{0,15},$ | 1 | -3.835611 | -3.835611 |
| Sum | | | | | -169.31771391929294 |

$$\Delta G = -32.75003931853438$$

$$\Delta E = -0.06448971135750282$$

$$|E| = 7$$

$$|U| = 5$$

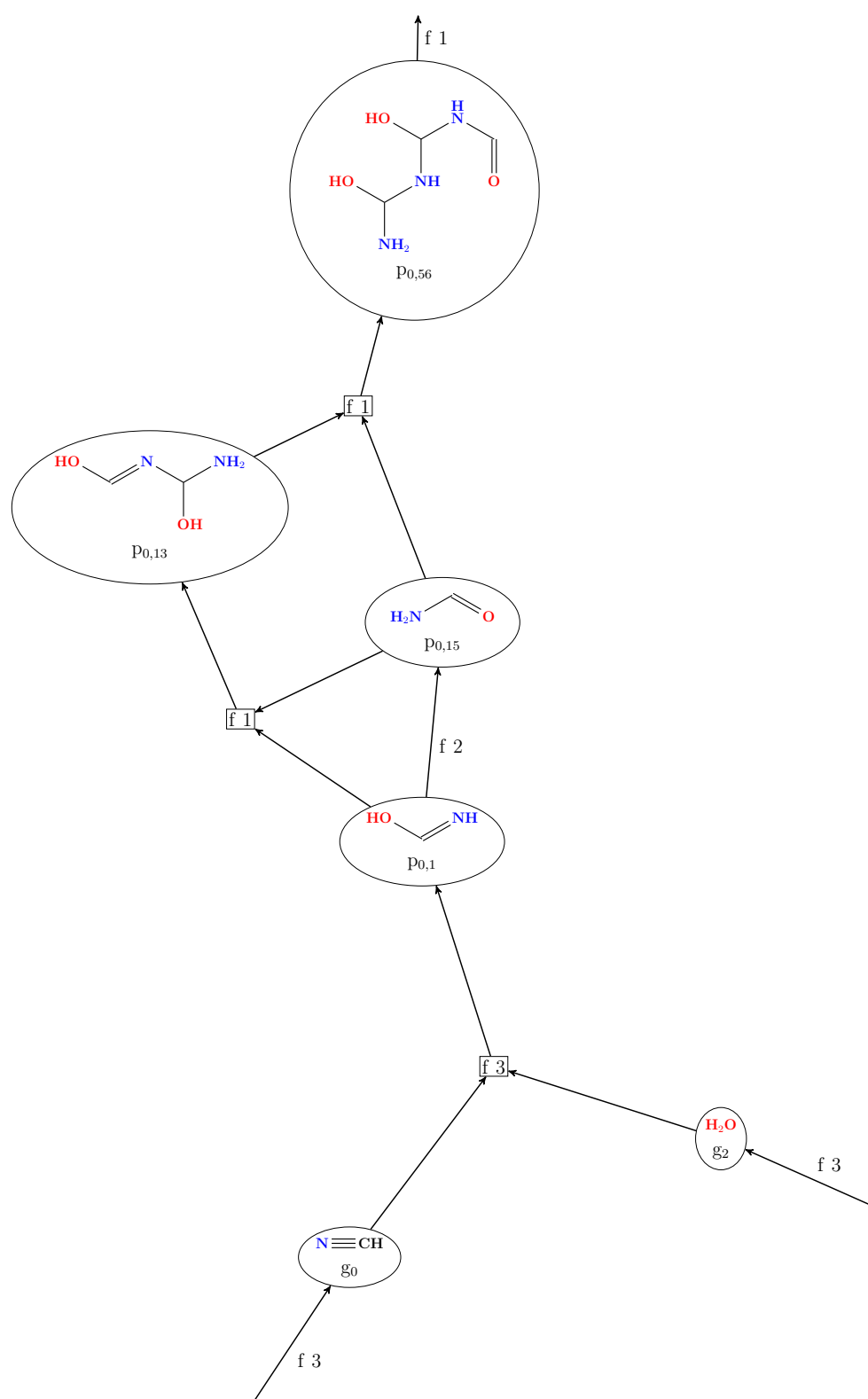
0.3.12 Solution 11

Overall Data

Objective value (non-integral): -0.049396

| Vertex/Graph | In | Out | G | logK | t_order |
|----------------|----|-----|------------|-----------|---------|
| $g_{\{0\}}$ | 3 | 0 | -5.507152 | -6.000000 | 0 |
| $g_{\{2\}}$ | 3 | 0 | -5.068043 | -6.000000 | 0 |
| $p_{\{0,13\}}$ | 0 | 0 | -21.240678 | -5.193215 | 4 |
| $p_{\{0,15\}}$ | 0 | 0 | -10.625174 | -3.000000 | 2 |
| $p_{\{0,1\}}$ | 0 | 0 | -10.610080 | -3.000000 | 1 |
| $p_{\{0,56\}}$ | 0 | 1 | -31.869324 | -6.000000 | 67 |

Filtered Graph



File: out/130_dg_0_11100_f_0_11_filt

| Vertex | InFlow | OutFlow | $x_v^{\Delta G^0}$ | x_v^K | $x_v^{\Delta G}$ | t_v |
|------------|--------|---------|--------------------|-----------|------------------|-------|
| g_0 | 3 | 0 | -14459.025578 | -6.0 | -14478.980288 | 0 |
| g_2 | 3 | 0 | -13306.144961 | -6.0 | -13326.099672 | 0 |
| $p_{0,1}$ | 0 | 0 | -27856.761341 | -3.0 | -27866.738696 | 1 |
| $p_{0,13}$ | 0 | 0 | -55767.391129 | -5.193215 | -55784.662644 | 4 |
| $p_{0,15}$ | 0 | 0 | -27896.389963 | -3.0 | -27906.367318 | 2 |
| $p_{0,56}$ | 0 | 1 | -83672.898792 | -6.0 | -83692.853502 | 67 |

| Hyperedge | Source | Target | Flow | $x_e^{\Delta G}$ | $\bar{x}_e^{\Delta G}$ |
|-----------|-----------------------|-------------|------|------------------|------------------------|
| 6 | $g_0, g_2,$ | $p_{0,1},$ | 3 | -54.17572 | -54.17572 |
| 36 | $p_{0,1},$ | $p_{0,15},$ | 2 | -39.628622 | -39.628622 |
| 169 | $p_{0,13}, p_{0,15},$ | $p_{0,56},$ | 1 | 0.0 | 0.0 |
| 192 | $p_{0,1}, p_{0,15},$ | $p_{0,13},$ | 1 | -10.885831 | -10.885831 |
| Sum | | | | | -129.689091815498 |

$$\Delta G = -25.267023505963316$$

$$\Delta E = -0.049395966339261764$$

$$|E| = 7$$

$$|U| = 4$$